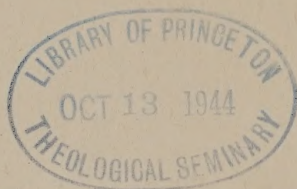


CHILD PSYCHOLOGY

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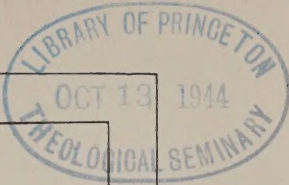
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F. A. Moss, Ph.D., M.D., EDITOR

CHILD PSYCHOLOGY

Revised and Enlarged



CHILD PSYCHOLOGY

BY
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REVISED AND ENLARGED

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TO C. L. J.

PREFACE TO REVISED EDITION

During recent years there have been marked advances in the study of the development of children. In preparing this edition of *Child Psychology*, the author has availed himself of the research literature that has accumulated on the subject since the publication of the first edition. In the meantime he has had the privilege of continuing his own work in the field of child psychology and of gaining such seasoning as comes with the passing years.

This book embodies certain topics that were not treated in the earlier edition, a recasting of the discussion of previously treated topics in the light of newer information, and certain changes in viewpoint and emphasis.

A new chapter has been added on the subject of learning and growth. Another new chapter deals with the establishment of habits of eating, sleeping, and elimination—worthy occupations that often are slighted in standard textbooks even though they absorb much of an individual's time, are deeply involved in a child's early training, and illustrate significant principles of development.

New chapters also deal with the respective topics of children's interests, imaginative activities, and moral and religious concepts. The chapters dealing with the emotions have been expanded. The material on social behavior has been substantially recast and has been organized into two chapters, in keeping with the importance of this aspect of development from the point of view of the welfare of the individual and the light which it throws upon adult affairs.

The order in which some of the chapters follow each other is unavoidably somewhat arbitrary. It will be feasible, if so desired, to modify this order in reading or assigning the various chapters.

Throughout the book, writings that are cited have been iden-

tified by the names of the authors or by references to the bibliography. (The author has found that some students who are unfamiliar with this form of acknowledgment are puzzled by it. It is not intended, of course, that students should memorize the authorship of each bit of evidence that is cited.) Needless to say, these references would have to be multiplied many times if acknowledgment were made of all who, either directly or indirectly, have contributed.

The author is thankful to many persons for help in preparing this revision. Dr. Dorothea McCarthy kindly read the entire manuscript, and Dr. Robert L. Thorndike and Mrs. Margaret F. Meigs read parts of it. To these the author is deeply indebted for constructive criticism and for numerous suggestions concerning organization and treatment. Editors and publishers of journals, monographs, and books have been very generous in giving permission to quote and to reproduce tables. Mrs. Lillian S. Brown, in a remarkable triumph of mind over matter, converted the original manuscript into legible copy, and kept her fingers on the countless details of subsequent revision, checking, proofreading, and indexing. The author is most grateful to his wife for help during all stages of the preparation of the book.

A. T. J.

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CHAPTER I

THE NEWBORN CHILD

A sharp cry tells of the coming of a new human being who only forty weeks earlier consisted of a single cell. He looks helpless; yet he is capable of the processes necessary for the maintenance of life. He exhibits a large array of movements, but many of his movements are diffuse, and even some of his reflexes are not fully developed. Within a few hours after birth he shows some response to lights and sounds, smells, tastes, and bodily contacts, but many of his responses are aimless and undefined.

Changes in his behavior come rapidly even within the first few hours of life. In the near future his movements will be fashioned into countless skills, he will master the intricacies of language, his mental world will include recollections of the past and plans for the future, and his social and emotional behavior will be organized in complex ways. A study of these changes during the child's formative years gives an insight into human nature such as no study at a later period of life can give. Although our knowledge of the child's mental, emotional, and motor development is far from complete, much important information is available from observation and scientific study. Such information has accumulated especially rapidly during recent years.

Later chapters in this book will deal with the development of the child from birth onward. The contrast between the infant's limitations at birth and his characteristics within only a few months thereafter is striking, but quite as spectacular are the developments shown at birth by the child who, forty weeks earlier, was a single-celled organism. The following discussion will deal with some of the characteristics of the child during the first few days of life. It will touch also upon developments that take place before birth, for much that we see in the child at birth and in the

infant during the months to come is a continuation of developments that have been taking place during prenatal life.

Much as we should like to, we cannot peer into the mental life of the newborn child. We can only guess at what his experience of the world might be by watching what he does. Although there is a high degree of continuity between development before and after birth, the event of being born obviously calls for many new adjustments. The very process of being born is in itself usually quite arduous, at least for the mother. During prenatal life, the infant received nourishment through the umbilical cord, but he now must suck for a living; he must now depend upon his own equipment for respiration, the regulation of bodily temperature, and the elimination of waste. He also is exposed to new lights and sounds and contacts, while earlier he was insulated from the outside world.

If an infant were sensitive to such matters, it is clear that the business of being born would be quite an ordeal for him. It has even been conjectured that the birth process may be so overwhelming to the child that it can produce a profound "psychic" wound; it has also been conjectured that there may persist, long after, an unconscious desire to return to the peace and protection of the mother's womb. It goes without saying that such notions must be taken with a good deal of reservation. The person who is being born is, after all, not an imaginative and sensitive adult but an immature child, with an immature nervous system and with immature capacities for sensing and feeling.

It would be fascinating to know just what the newborn infant does experience and what sorts of feelings and impressions, if any, occupy his "mind." His overt behavior and facts that are known about his nervous system give many clues, but it is necessary to be cautious in interpreting these. At birth, the nervous system has already undergone tremendous growth, but important developments still lie ahead. Those parts that are most essential to life are the first to develop during prenatal life. Thus, the autonomic nerves that control the unstriated muscles (involved in circulation, respiration, digestion, and so forth) are the first to become estab-

lished, and the lower nerve centers in the spinal cord and brain stem are ready to function considerably earlier than are the higher brain centers, which are man's main possession and pride. Observations on this point and other aspects of the child's development before birth have been made through a study of subjects who, for medical reasons, have been delivered at varying periods of time before full term. It has been observed that, at the fifth month of fetal life, for example, movements such as a change in heart beat and movements of the thorax, diaphragm, head, and neck may occur in response to direct stimulation of the medulla, but stimulation of the cerebral cortex at this age produces no bodily response.¹ When the cerebral hemispheres do come into play, their effect at first is largely to inhibit and to moderate movements, rather than to initiate them. The higher brain centers are not fully developed when a child is born.

BEGINNINGS OF BEHAVIOR

The beginnings of behavior come long before the child is born, well in advance of the time when the mother first begins to detect movements of the child at about four and a half months after conception. At the end of the second month of fetal life, muscles have been observed to contract in response to the stimulus of an electric current applied directly to the muscle. During the third month, responses that resemble reflexes and that appear to involve the transmission of nerve impulses from one part of the body to another have been observed, although there is disagreement concerning the first occurrence of behavior of this type. By the end of the third month and early in the fourth, certain reflex responses, such as extension of the toes when the sole of the foot is stimulated, have been observed; and during later months, some other reflexes take on more precise form. Among the various movements that have been identified are sucking movements in response to direct

¹For accounts of prenatal development, see Feldman (17), Scammon (48), and Jordan and Kindred (28). For a review and discussion of scores of studies, including investigations by Minkowski (33, 34, 35) and others, dealing with prenatal development of behavior, see Carmichael (12). Numbers in parentheses refer to references listed at the end of the chapter.

stimulation of the mouth and tongue at six months, a well-defined knee jerk at seven months, and the grasp reflex in the eighth and ninth months of prenatal life (12).

It has been noted that development before birth tends to proceed in a *cephalo-caudal* direction (48)—that is, growth and differentiation progress from the head to the tail region—so that, during the earlier stages of growth, development in the head region is far in advance of development in the posterior part of the body. This does not mean, of course, that development is complete at one end before it begins at the other. Illustrating this trend in development on the physical side is the fact that the head is well developed before the legs assume their final form and that the arms are budding before leg buds appear. Analogous to this, after the child is born, is the fact that a child can make good use of his arms in reaching and grasping before he can use his legs in standing and walking.

Paralleling this cephalo-caudal trend in the body as a whole is a similar trend in the development of segments of the body. In these, development is in a *proximo-distal* direction; the structures that lie nearest the main axis of the body mature earlier than those that are more remote. Again after birth, we see a behavior trend analogous to this in the fact, for example, that control of gross movements of the arm and forearm comes earlier than control of the wrist and fingers.

Activity of the unborn child rises to a peak at about the eighth to the ninth month (47). Much of the movement of the unborn child seems to be in response to internal conditions, but it is possible also to provoke movement by external means. One observer noted, for example, that a kick and other movements were exhibited by a child thirty-one days before birth when the sides of the bathtub in which the mother was lying were struck with a glass jar or a metal rod (18); and during late stages of pregnancy, mothers have also reported that a musical concert may lead to increased fetal activity.

In another study (Sontag and Wallace, 55, 56), apparatus con-

sisting of rubber sacks were attached to the mother's abdomen and connected with tambours that actuated recording pens. Various sounds—such as a bell, a buzzer, and a wooden knocker with a sound block placed over the fetal head—were produced. Response to stimulation of this sort was noted (that is, movement in excess of what normally occurred) at about the thirty-first week of intrauterine life.

Conditions in the daily life of the mother may likewise precipitate greater than normal amounts of fetal activity (54). Two mothers, for example, when observed during periods of severe emotion, showed more fetal movement than was observed during moments of calm. Many mothers who were questioned reported that they experienced more feeling of fetal activity when they were fatigued than when they were rested (although, as is pointed out in the study, this may be due to greater sensitivity on the mother's part). Changes can also be noted in the fetal heart rate. In some instances, the rate was found to be higher after the mother had climbed a flight of stairs than some minutes later and higher after she had smoked a cigarette than just before or some time later; however, such an increase did not appear in all cases, and there were large individual variations.

Individual differences in amount of fetal activity and in the changes in activity occur as pregnancy advances. The fact that fetal movements have been found to vary under different circumstances and may be influenced, to some extent, both by the general condition of the mother and by the mother's response to external stimuli opens quite a field for speculation and research concerning the possible influence of the prenatal environment on the later behavior and personality of the child. In view of all the factors that influence behavior before and after birth and in view of the protection with which nature surrounds the unborn child, it no doubt would be difficult to find conclusive evidence in such a line of study.

In an investigation of twelve infants (Richards and Newbery, 46), it appeared that the amount of activity exhibited by the child

before he is born might foreshadow, to some degree, the rate of his development as compared with other children during the first few months of postnatal life. The authors emphasize, however, that such findings must be interpreted with caution, since the number of subjects was small and, furthermore, since similar relations might not be found between prenatal mobility and behavior at a later age. Moreover, in other studies up to the present time, it has been found that there is little relationship between the child's developmental score at six months and his scores on tests in later years.

BEHAVIOR AT BIRTH

The newborn infant spends a good deal of his time in a sleeping state (9). Although it sometimes is difficult to judge just when he is asleep and when awake, he seems to be sleeping about five sixths of the time. Although he sleeps much, he also awakens often; his sleeping periods are shorter in duration than will be the case later on.

Much of the infant's activity seems to be related to the state of his stomach; he requires frequent feedings (10, 21, 44) and, when hunger contractions occur, is likely to squirm, cry, kick, and thrash, and cannot be diverted by lights and sounds and other stimuli which an experimenter might wish to bring to bear.

Generalized Movement. Although it is possible to distinguish a large number of more or less clearly defined acts in the general flow of the newborn infant's activity, an outstanding characteristic of his early behavior is the occurrence of a vast amount of diffuse and seemingly uncoördinated movement. Such movements, frequently designated as "mass activity" (23, 25, 53), may at times, during waking moments, be so rapid and varied that an observer is quite unable to give a detailed account of them. The infant thrashes about with his arms and legs, and sometimes every part of his body seems to be active at once, with little or no coördination between the various members.

In these mass activities, the infant displays considerably less

specialization of movement than will appear in time. Even in connection with apparently simple reflex activities or in response to external stimuli applied to a limited area of the body, there may be a variety of associated movements in other parts of the body. For example, when an object is brought into contact with the infant's mouth, he is likely to begin to suck; but at the same time, in response to the same stimulus, he may show many apparently unrelated additional movements in other parts of the body. Some activities may be elicited by means of stimuli that seemingly should have little bearing on the act that is produced. Thus Jensen (27) found that infants made sucking movements when their hair was pulled, when they were dropped, and when someone pinched their big toes. Pratt, Nelson, and Sun (42), in a study of a large number of newborn children, observed that stimulation of almost any group of receptors by almost any kind of stimulus will lead to a response in almost any part of the organism, but movements are likely to be more generalized in connection with some activities than others (41). The state of affairs thus described does not mean, however, that the infant's responses are so unorganized that no adaptive movements are possible. Even though a pinch of the toe may sometimes produce momentary sucking movements, and even though sucking in response to a stimulus applied to the mouth may be accompanied by movements of the leg, there still is a good deal of method in this seeming madness. Offer the healthy child a nipple when he is hungry, and he will do a fine job of sucking, regardless of other activities that may accompany it; pinch his toe, and his response is likely to be more pronounced in the limb that is pinched than in more remote areas of the body. In other words, even though the child exhibits a great deal of generalized movement, there is a degree of specialization of behavior right from the start.

It is possible to detect quite a repertory of accomplishments in the general flow of his activity. He sucks, swallows, excretes, defecates, vomits, salivates, hiccoughs, sneezes, yawns, stretches, kicks, waves arms and legs, trembles, shivers, turns his head,

grimaces, moves his eyes, blinks, cries, grunts, and sighs. He can meet the world more than half way in his ability to make his presence known. He exhibits also a large array of additional reflexes.

Reflex Action. The term "reflex" has been used to designate reactions that involve a connection between stimulus and response that is not learned but is involuntary and native, or inherent, in the organism; as usually employed, the term also implies a well-differentiated, specific, and fixed reaction. Actually, however, some responses that are labeled as reflexes are somewhat less fixed and specific when they first are exhibited by the newborn child than will be the case with the passage of time. Sucking, for example, is a response that is ready for business when the child is born; but, as noted above, sucking movements are neither as precise nor as specific at birth as they come to be in time.¹ Furthermore, at the start, when sucking follows stimulation of the region of the mouth, the child may also respond with many bodily movements other than sucking (42). As the child grows older, however, the response becomes more specific. In like manner, it has been noted that the plantar reflex (which may roughly be described as flexion of the toes following scratching or tickling of the soles of the feet) does not show a uniform and invariable pattern at birth, but many different patterns of response may appear (39); gradually, however, there emerges from this mass activity of the limbs a more definite reaction of the toes, with modifications during later months, followed by a waning of the response at about four or five years (45).

Among the various reflexes may be noted the pupillary reflex, in the form of dilation and contraction of the pupils in response to light. This is found in practically all infants from birth, but varies greatly among individual infants (3, 50). Tendon and muscle reflexes, such as the knee jerk and the abdominal reflex, can be elicited when conditions are favorable (3, 13). Postural reflexes can also be observed; most infants, when lying in a prone position, can lift their heads momentarily (8, 20). From the

¹ For a general discussion of studies dealing with this topic, see J. E. Anderson (2).

prone position, also, the newborn infant tends to revert to the fetal position: knees drawn up, arms in front of chest. When placed on his back, the normal sleeping position is arms flexed with fists closed and lying parallel with the sides of the head, head to one side, and knees flexed and turned outward (52).

The Moro reflex occurs in response to varying stimuli (19); one way of eliciting it is to strike the table on either side of a prostrate infant. The infant throws out his arms and then brings them together as if in an embrace. At the same time, the legs are thrown out and then flexed. This reaction was believed by its discoverer to be an atavistic or primitive fright reaction in response to the jarring of the body (36). In a primate, such movements of the limbs possibly might serve to grab hold of the mother's body or the trunk of a tree. One investigator (Schaltenbrand, 49), terms it a "readiness to jump reaction, ensuring a safe landing." This reflex undergoes changes during the first months of life. McGraw, who has studied the Moro reflex in a number of infants, reports that at about three or four months the gross movements have diminished considerably; and that, at about seven months, overt movements have further waned, so that practically all that is exhibited is a fine body jerk accompanied by blinking (31). The changes from the more massive to the more refined and subdued response, according to McGraw, parallels certain developments in the infant's nervous system. According to this account, the cerebral cortex is not functioning in the first phase of the response. As the cortex develops and comes into play, the response becomes more restrained, so to speak.

One of the most widely discussed of infant reflexes is the grasp reflex, which occurs when an object is brought into contact with the palm of the hands (13). Oftentimes this grasp is so powerful that the infant can be lifted into the air and can support his own weight momentarily or longer. The strength of the reflex seems to be greatest when the infant is excited or crying, least when asleep (51). This reflex, like the Moro, changes with time. The "involuntary" grasping of the young infant recedes as the child

matures and becomes increasingly competent in voluntary control of the movements of his hands.

Reflexes suggestive of locomotion can also be noted. If placed prone on a hard surface or if stimulated on the sole of the foot, the newborn infant will sometimes make crawling or swimming movements, in an apparent effort to propel himself forward (37, 52). He will sometimes make swimming movements when placed in a tank of water. If held upright, with feet touching a table or hard surface, he will make "stepping" or "dancing" movements (13, 52). These reflexes of locomotion wane within a few weeks after birth and seem to bear no immediate relationship to the later progressive stages of learning to crawl, creep, stand, and walk.¹

SPECIAL SENSES

It is obviously impossible to discover just what sensations or impressions a newborn child experiences when exposed to lights and sounds and other stimuli. Even the matter of studying overt behavior presents many difficulties, quite apart from the fact that babies differ from one another and that the same baby may respond differently at different times. The infant's activity will be influenced by many conditions, such as being wet or dry, hungry or sated, asleep or awake. Mass activities such as have been described above further complicate matters. There are further difficulties involved in applying the stimuli that are to be used, in timing the stimuli and grading their intensity, in discounting the possible effects of other stimuli—such as touch and pain when tests are made of a child's response to substances used to test his sense of taste.

There also is the problem of how to adjust experimental procedures to the child and his ways. The immature infant is unable to do much to coöperate with the experimenter, so that it becomes the experimenter's job to coöperate with the infant. It is even

¹ A full catalog of the reflexes and characteristic movements would run to great length. For a summary of findings in studies of behavior in early infancy from 1920 to 1934, see Dewey (16).

possible that the very steps an experimenter takes to control the sources of error that might arise and to make conditions constant for all infants may defeat his own purpose. Suggestive in this connection is a study dealing with infants' ability to fixate upon an object and to follow it with the eyes (Beasley, 4). One possible procedure in a study of this sort would be to make conditions constant for all subjects by approaching all children, at all times, in the same manner, holding the light at a given distance and at a given angle, and then moving it around in the field of vision always over the same path, at the same speed, and so on. This approach was not used by Beasley, who tried to meet the child more than half way. He first moved his stimulus (a light or a small cylinder or the experimenter's fingers) into the child's line of vision until he found the point at which the child's eyes seemed to be fixed upon it. (The point at which fixation was thus secured varied considerably with different infants; some seemed best able to fixate the object at a distance of twelve to fourteen inches, while others did better at a distance of six or eight inches.) Only after fixation had thus been procured did the experimenter proceed with the next step of finding how far and how long the infant would continue to keep his eyes on the object and pursue it with his eyes as it was moved about in the field of vision. The results indicate that, during the first few days of life, children were more capable of following a visual stimulus than would have been the case if more arbitrary experimental procedures had been used.

Sight. As already suggested above, the average infant, almost from the time of birth, is capable of a variety of movements that normally are associated with proper use of the eyes (30). The ability to fixate an object and to pursue it briefly probably indicates that the infant is seeing or obtaining brief glimpses of one sort or another, although we have no way of knowing what kind of visual impression he obtains. Infants vary considerably in their apparent ability to fixate, and in a few children, movements of the eyes are uncoördinated for a time after birth. It is not until many weeks

after birth that eye coördinations in fixing and pursuing an object that moves up and down or from side to side in the field of vision are fully established.

The average infant likewise can open and shut his eyes and blink. However, some infants who blink when someone blows on their eyelids or touches them may fail to blink if an object is moved rapidly toward their eyes (59). Enlargement and contraction of the pupils have also been observed during the first days of life, although the response may be less prompt and uniform than will be the case at a later age (22). In studies of the infant's bodily reactions to light, it has been found that different intensities may produce varying amounts of activity. The amount of activity may not vary directly with the intensity of the light, however; for under some circumstances, the infant may exhibit more activity in a light so dim that his figure is scarcely discernible than under conditions of somewhat brighter but still quite moderate illumination (26). It was observed in one study that a bright, intense flash of light may produce a bodily reaction, as though the infant were startled, accompanied by changes in breathing and circulation (38).

Hearing. As stated above, a child may be responsive to the physical vibrations that produce sound even before birth. It cannot be surmised from this, however, just what the child actually hears. In a review of studies on this subject, Pratt (40) points out that some investigators have claimed that infants are deaf at birth; but in numerous studies, it has been found that a majority of subjects who have been observed during the first few days of life respond in one manner or another to auditory stimuli. [A wide variety of responses have been reported, such as changes in respiration, jerking movements, blinking, turning of the eyes, cessation of crying, increased bodily activity in response to loud sounds, and sometimes a decrease in bodily movement in response to sounds of moderate intensity, as contrasted with complete silence or very faint sounds (26, 42, 57, 60)]. What seems to be the case is that there are wide variations between individual chil-

dren. When an infant does seem to be insensitive to auditory stimuli, this condition may be associated with obstructions or physical imperfections in the organs of hearing at the time of birth.

Two interesting studies have utilized auditory stimuli in investigations of the young infant's ability to "learn" or to acquire a "conditioned response" in connection with sound stimuli.¹ In one of these (Marquis, 32), the subjects were eight infants. The infants were bottle-fed from the time of birth, and at each feeding a buzzer was sounded. After three to six days, seven of the eight infants exhibited many responses related to feeding—such as an increase in sucking, mouth-opening, lessening of general activity, and crying—in response to the buzzer alone. Since, as noted earlier, an infant's response to any sort of stimulus may be quite generalized, some of these effects might, of course, have occurred even if feeding had not been used as a "conditioning" stimulus, but such findings are suggestive. In another study (Aldrich, 1), an apparently "conditioned" response to sound was produced in an infant who did not, when the experiment began, respond to the usual tests of hearing. The baby's foot was scratched with a pin and, at the same time, a bell was rung, out of sight of the baby. This procedure was repeated every half-hour during one night and part of the following morning. By mid-morning, the infant withdrew its leg when nothing was done to its foot and only the bell was rung. This study, like the above, has interesting implications, although further research, with a variety of control procedures, is necessary to confirm and to elaborate the findings.

Other Sensory Responses. As indicated by the amount of sucking, facial, and bodily reactions of various types, it appears that, although the average baby does not react differently to mother's milk than to cow's milk, he responds positively to milk *per se* and to sweet solutions, and gives a negative response to solutions that are strongly salt, sour, or bitter (4, 42).

¹ Studies have also been made to find whether the unborn child is able to "learn" (43, 55), but the results have been inconclusive.

In carefully conducted studies of the infant's sense of smell, it has been found that odors such as ammonia and acetic acid, which are powerful enough to cause discomfort to adults (perhaps by virtue of pain rather than olfactory stimulation), also produce reactions in newborn infants, while milder odors, which adults are able to detect, appear to have little effect (42). Infants react to temperatures that are hotter or colder than the normal temperature of the body, and they appear to react more to extremes of cold than to extremes of heat (42). Incidentally, it may be noted that the matter of temperature regulation at birth is complicated by the fact that the surface area is many times larger per unit of total bodily weight in the infant than in the adult.

In the child's early experience, it appears that certain forms of sensory stimulation loom relatively larger than will be the case as he grows older. Much of his early experience revolves around his digestive tract and the direct bodily contacts involved in his daily routine of being lifted, carried, washed, dressed, nursed, and otherwise cared for. In early infancy, the child lives close to his own physiology, so to speak. The experiences related to food-getting and vegetative processes, as well as cutaneous contacts, continue into later years, of course; but in time, as the child's horizons expand to take in distant events—such as sights and sounds that do not impinge directly upon his body—they lose some of their pre-eminence.

THE EMOTIONS OF THE NEWBORN CHILD

Adults often read their own emotions into the behavior of an infant. Cries, starts, and squirms can readily be interpreted as signs of pain, or of anger or fear, such as the adult might experience if he were in the child's place. Adults may be mistaken, however, when they thus interpret the infant's behavior in terms of their own experiences (51).

The infant seems relatively insensitive to certain forms of pain stimulation. It is not possible to tell how soon or how deeply the infant feels pains as they are experienced by adults, but it is un-

doubtedly true that many of the pains of adults are more intense by reason of past experiences. If pain stimulation could be stripped of previous associations, many agonies experienced by older people would no doubt be less severe. It is interesting to observe how the infant's apparent insensibility to certain pains is reflected in medical practice. Circumcisions performed upon a child under two weeks of age without the use of an anesthetic, and other forms of surgical treatment, do not cause signs of suffering such as can be detected in older persons. However, we cannot be certain that absence of outward signs denotes a similar absence of feeling. Some other symptoms of emotional response are somewhat more positive. Frequently a child will start, kick, or squirm when a sharp noise or a shrill whistle is sounded near his ear, and such bodily movements are sometimes followed by crying. A soft bell, on the other hand, will sometimes have a quieting effect. Crying also will occasionally occur when the young infant is dropped.

Such behavior might be regarded as the beginning of fear. But other forms of stimulation, which a sympathetic adult would not regard as particularly fear-inspiring, may produce similar bodily movements and similar cries. Moreover, infants often seem quite undisturbed by rather drastic treatment. In one study (24), twenty-four infants under one month in age were raised in a supine position above the experimenter's head, were dropped, and were caught after they had fallen a distance of two feet. In eighty-five trials of this sort, crying resulted only twice. In twelve per cent of the trials, the infant made no detectable overt response. In half the number of instances in which the children did react to this treatment, their movements were confined to the arms alone.

It is difficult to find any uniform or well-defined emotional response in the infant's behavior during the first days of life. In one series of observations, it was noted that infants sometimes made facial expressions of apparent disgust after having consumed a salt solution; but in ninety-five per cent of the cases, the infants'

changes in behavior were not accompanied by marked facial expressions (Jensen, 27).

A similar lack of organized emotional responses is seen in attempts to provoke "rage" reactions in the child. Bodily restraint and interference with movement—such as that caused by pinning the child's arms to his sides, or by pressing one's finger against his chin, or by compressing his nostrils so that he cannot breathe—have been regarded as effective stimuli in producing rage. As a general rule, any kind of interference with activity is an effective stimulus to anger. But there is a question as to how early the child is "angered" or exhibits "defense" reactions—including such movements of defense and attack as slashing and striking with the arms and hands, stiffening the body, and holding the breath—in response to provocations that presumably would anger an older person.

Pressure was applied to infants' chins by the experimenter's forefinger in one investigation of infants during the first few days of life (50). The child's response was considered a successful coördinated defense movement if both of his hands touched the distal part of the experimenter's forefinger in a pushing motion. No infant younger than twenty-one hours made a successful defense movement as judged by this criterion. However, the motor "defense" responses improved, and they were fairly regular and accurate at the age of about five days.

The most extensive study of "rage" in young infants is that of Pratt, Nelson, and Sun (42). In one experiment, sixty-seven infants, ranging in age from birth to eleven days, were given the treatment of having their nostrils compressed in such a way as to prevent breathing for periods ranging from five to fifteen seconds. The most frequent reactions were attempts to draw back the head, an arching of the spine, and movements of the extremities. Coördinated slashing and striking "defense" movements with the hands, of a sort that might be indicative of "rage," were not at all the typical response but constituted only one per cent of the infants' movements.

In another experiment, sixty-six infants, ranging in age from birth to twenty-one days, were subjected to the stimulus of having their arms pinned to their sides (42). In few cases were there well-defined "rage" or defense reactions. In a majority of instances, the children remained passive; sometimes the infants responded with bodily movements for a brief period and then subsided, but in only a small percentage of cases was there a rudimentary form of defense in the nature of an immediate or slightly delayed flexion of the muscles and other signs that might be interpreted as anger. As far as outward manifestations are concerned, this experiment, accordingly, casts doubt upon any theory that definitely discernible rage reactions appear during the first few days of life, but the occurrence of signs of anger will no doubt depend in part upon the intensity and the duration of the provocation that is applied and upon the child's own inner disposition to be active or quiet at the time when the interference is applied.

As already indicated, during the first days of life, the child may exhibit sudden movements resembling those of an older person who is startled, and he will also express himself in cries. But his cries are not differentiated into uniform and distinct cries of anger or hunger or pain. Similar movements and similar cries seem to appear under a variety of conditions. It is conceivable, of course, that a child might have many feelings associated with his own organic condition, even though outwardly he seems to be relatively unresponsive to stimuli of the sort that in time are likely to provoke an emotional response. But authentic information concerning this would be very difficult to obtain.¹

From the viewpoint of emotional expression, the child's reactions group themselves on the one hand as reactions of apparent withdrawal or rejection, such as squirms, twists, tension, movements of the trunk and the arms and extremities, turning of the head, and cries. On the other hand, there are reactions of apparent acceptance, quiescence, passivity, and a rudimentary form

¹ Some conjectures concerning the emotional life of the infant are considered in a later chapter.

of pursuit, such as is found when the child turns his head and opens his mouth to suckle when an object is brought into contact with his lips. His overt behavior during the early days of his life does not show organized responses to which a particular label, such as anger, fear, or joy, can confidently be attached.

“PERSONALITY” DIFFERENCES IN THE NEWBORN

Almost from the moment of birth, infants exhibit a good deal of difference in “personality.” Some are decidedly more mobile, active, and “on the go” than others. Differences in the “birth cry” alone may be quite outstanding. Depending largely on the child’s physical condition at birth, one baby announces his coming with a splendid, long, piercing, and lusty bellow; while, at the other extreme, are babies who give voice to only a few brief and feeble cries or make scarcely any sound at all. During ensuing hours and days, different babies may, to varying degrees, be restless, “irritable,” “fussy,” and tend to cry much, while others are more placid and serene.

In a study of newborn infants, hospital nurses who bathed, fed, and dressed the infants recorded items of behavior, such as whether the infant was asleep or awake, restless, irritable and crying, or placid (Sherman, Sherman, and Flory, 51). These records, in turn, were compared with records obtained in studies of the reflexes and sensory responses of the same infants. It was found that the “good” babies exhibited many of the characteristics of sleeping babies; the pupils of their eyes were smaller and their pupillary reactions to light were slower, and they were less responsive to pain stimulation. On the other hand, they compared favorably with other babies in their grasp reflexes, defense reactions, and general coordination.

Owing to the many factors that may influence a child’s behavior during the first days of life—including, among other matters, the “age” of the child when delivered and the circumstances of his delivery—it is not likely that the infant’s “temperament” or “personality” soon after birth will give a reliable prediction of the

characteristics which the same child will show as he grows older. Infants in one group that was studied were rated on such items as restlessness, fussing when not promptly fed, and frequency of crying while in a maternity hospital (6). Two years later, the same children were scored in terms of a rating scale. There proved to be little resemblance between the earlier and the later ratings. As far as present findings extend, it does not appear that the characteristics of the child during the first days of life gives at all a trustworthy indication of his future traits, except in the case of children who deviate from the normal to a marked degree.

ORGANIZATION OF BEHAVIOR

Much attention has been paid to the problem of how behavior is organized in the beginning. Discussions of this subject have been based in large part upon observations of the development of behavior in lower animals because of the practical difficulties involved in obtaining systematic observations of human beings at various known stages of prenatal growth. On the basis of observations of *amblystoma* (a salamander), Coghill (14) takes issue with the notion that behavior represents a knitting together of many independent movements. Rather, he maintains, reactions of the total organism precede separate movements of parts of the body. The primary state is one of integration, and partial movements become individuated out of this preceding total. Swimming movements begin, for example, before mobile limbs and appendages have developed. As development proceeds, the gills can be observed to move, then the forelimbs, then the hind limbs; but these appendages are not, at the start, capable of independent movement. Movements of the individual limbs are allied with and are an integrated feature of movement of the body as a whole before independent movements are possible. It is not until later in development that the appendages acquire a certain amount of independence and that "pure" reflexes involving a separate limb or appendage appear.

In like manner, Coghill describes the first visual responses of

amblystoma as total reactions, involving coördination of various parts of the body in one integrated movement. As an object moves from left to right through the animal's field of vision, the eyes rotate in pursuit as the head follows the movement of the object by flexion of the trunk to the right. Coördinated with these movements are movements of the axial muscles; the right foreleg moves backward and the hind legs participate in the movement, even though they as yet are incapable of independent action.

Coghill implies that these and similar observations of the salamander and other lower animals (15, 58) hold true for animals in general, as well as for man. On this point, however, there is not complete agreement among investigators; for in other experiments by Carmichael and others with the fetuses of mammals, it has not been found that all observed movements conform to the concept of a gradually expanding total pattern, completely integrated from the beginning (7, 11, 12, 61, 62). Carmichael also points out that, while much that can be observed in the development of behavior may be described in terms of the concept of individuation of specific movements out of previously larger activities, a full description would have to go many steps further (12).¹ Various activities are differentiated at different times, and new relationships between specific responses are established before specialization has gone far in other activities. The full story would also have to take account of the development of behavior as it finally takes form after birth, when various movements and muscle groups are organized in countless ways in the thousand-and-one skills that the child eventually acquires.

SOME FUTURE TRENDS

It is instructive to look upon the condition of the child during the first few days of life, as compared with a few glimpses of his status during later months. As set forth above, the child at birth

¹ For an account of changes in activity as related to the prenatal environment, see also Kuo (29).

shows a wide array of performances; but apart from the activities necessary for the maintenance of life, his reactions are generalized and not well coördinated. He exhibits many fairly well-organized reflexes, some reflexes that are not clearly differentiated, and some that later will disappear with the development of voluntary control of his limbs. He does not show clearly differentiated emotional responses. Stimulation of his sense organs elicits a good deal of diffuse response. He is unable to fixate and follow an object with his eyes for more than a brief moment, and his reactions to tastes and smells do not show the promptness or the discrimination shown by an older person.

By the age of three months, the picture is very different. The child shows many more specific and adaptive movements. Much of his diffuse activity has given way to more specialized behavior. He now follows a moving light or an object with his eyes. Gestures and moving objects attract his attention. If an object falls out of sight, he will continue momentarily to look in the direction in which it disappeared. He appears to be disturbed at times when placed in a novel situation. He is more responsive to sounds, and will sometimes make searching movements with his head and eyes when a sound is made. His vocalizations and cries are more differentiated than at birth; he is able to laugh, he coos at times when comfortable, and his cries vary in different situations. He seems able to distinguish between individuals and objects, and his world has widened considerably beyond the things that impinge directly upon his sense organs.¹

By the age of six months, the child has progressed still further in the ability to take an active and selective interest in his environment. He is better able to distinguish between different situations. He can discriminate and fixate a small object, and tries to reach for it; he begins to oppose his thumb to the rest of his fingers in manipulating an object, quite in contrast to the gross and poorly

¹ Owing to large differences between children, from the time of birth and onward, individual children will show items such as these earlier or later than the time here indicated.

aimed movements of an earlier day; he is able to throw things out of his crib. He gives selective attention to new situations, turns his head in the direction of a voice, gives signs of recognizing familiar persons as distinguished from strangers. He begins to imitate sounds. By the age of twelve months, the repertory of his activities has shown further enlargement. He inhibits or executes simple acts on command; he joins in simple play; he moves toward an object that can be seen at some distance; and if he is distracted from an attractive toy for several seconds, sometimes for several minutes, he returns his attention to it.

These items represent only a few examples of developments that will be discussed in more detail in later chapters, but they illustrate certain general trends that can be noted as the child matures. With the passage of time, there is an increased differentiation of behavior—a decrease in generalized activity and an increase in specific movements that are under voluntary control. Also with the passage of time new activities emerge, and various performances are combined and organized into complicated skills. As the child progresses, there is a close interrelationship between the mental, motor, and emotional aspects of his development; but, as will be seen in later chapters, each aspect also has a story of its own. In tracing the development of various aspects of behavior, we find continual evidence of two closely related influences, *learning* and *growth*. To what extent do the developments that we see in a child at a given age come about because he “just grew” and to what extent has he been molded by the use and exercise of his abilities, and the training and opportunities for learning that have been provided for him? This question, which states the issue all too simply, will be considered in the chapter that follows.

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CHAPTER II

LEARNING AND GROWTH

Throughout the period of a child's development, two factors are constantly at work, namely, growth and learning. These factors are interdependent and cannot be isolated in "pure" form, but in some respects they can be considered separately. In everyday speech we continually make such a separation, as when we note that a child has *grown* two inches in height since we saw him last and that he has *learned* to recite *Jack and Jill*. At a later age, we may note that a boy has grown a beard and has learned to play the saxophone. The term "growth" as commonly used denotes physical and physiological changes that normally occur in a healthy child with the passage of time, while "learning" denotes modifications of behavior that have come about through impact with the environment, and the activities, performances, and skills that have taken form by virtue of experience, use, and exercise. This everyday distinction, like the everyday illustration above, actually oversimplifies matters, for on the one hand growth does not take place in a vacuum, devoid of experience, and on the other hand, growth of a sort is involved in any instance of learning. If we looked into the matter of *Jack and Jill*, for example, we would find that the four-year-old who now is able to memorize this verse could not possibly have done so at six months. He might have succeeded at two years, but it was considerably easier at four. Back of the ability to pronounce the words and to memorize the lines of *Jack and Jill*, there has been growth which corresponds in some respects to the growth underlying the increase in stature and in number of teeth, even though it would be impossible to isolate this growth as a separate factor.

A rough, practical distinction can be made however between changes effected by learning and growth, and such a distinction

is important from an educational point of view. The child's education begins at birth, if not before. Much of this education takes place through his countless contacts with his daily environment and is not definitely planned, but from the very beginning a good deal of his environment and many experiences calculated to promote his development are definitely controlled by his elders. The huge budgets involved in the formal schooling of children represent only a small fraction of the total outlay of time and means devoted to the training of children from early infancy. To make this investment yield the best returns for all concerned, it is important to try to adapt the child's training to his growing abilities and needs.

If, within broad limits, we could find at what stage in the child's development various activities and performances might most strategically be introduced, it would be a decided boon to both the child and his teachers. On the one hand, such information would enable us to avoid efforts to force the child's development, to impose tasks or obstacles which are beyond his powers and which, at a given stage, may produce irritation and resistance, whereas at a later stage they might be undertaken with interest. On the other hand, it would enable us to avoid the condition of supplying too little opportunity and too little stimulation for an adequate and enjoyable challenge to the child's powers. Obviously, a definitive schedule for introducing various performances and activities into the child's training could never be obtained. The child does not become "ready" for a given activity at one particular day or hour, and a child's behavior is influenced by many variables that are difficult to weigh or define. Even so, however, any general trends in research findings in this area would be of value, not only from the point of view of understanding the child's development, but also for practical purposes.

METHODS OF STUDY

The findings bearing on this question have emerged in part from studies dealing directly with the effects of special training;

in part from observations of the abilities and interests of children at a given level of development as compared with older or younger children; and in part from studies of the sequence of development and of the emerging interests and activities shown by children who have been studied intensively over a period of time. In studies of the first-named type, a frequent procedure has been to begin with two groups of children who are matched as closely as possible with regard to competence in the activity under study and on other crucial points. Following this, the "practiced" group receives special exercises or training, but no such special training is given to the children of the other group which is called the "control" group. At the end of the period of training, the children in the two groups are again measured and compared, and if the training has been effective, the scores will show a difference in favor of the experimental group. Quite frequently in studies of this kind, there follows a further period of study (a) during which neither group receives special training or (b) during which the children who previously were control subjects receive training similar to that previously given their peers. Following this, measurements are again made of all children concerned. It can be seen that even though this procedure can be used for practical purposes in measuring the effects of opportunities to exercise and to learn, it would be difficult to obtain a complete check; for, unless the control children are bound and gagged, they are likely, in the normal course of daily life, to encounter many experiences similar to those that are being provided for the experimental group (unless, of course, the activities in which training is being administered are totally different from anything found in the child's normal experience). Also, in studies of this kind, the skill and resourcefulness of the experimenter may have a decided effect on the results.

GROWTH FACTORS IN ESTABLISHMENT OF BASIC
COÖRDINATIONS

Studies of children during the first two years of life indicate that the growth factor plays a predominant role in the development of the basic coördinations involved in locomotion (such as creeping, standing, and walking) and in prehension (such as reaching, grasping, and opposition of thumb and fingers in handling an object). This does not mean, of course, that these accomplishments simply thrust themselves upon a passive organism, for the healthy child spends much of his waking time in exercising and in trying out his powers. It does mean, however, that the impetus for these early developments springs largely from within. There is not much that an ambitious adult can do to hasten these developments. In a study of the development of locomotion in twenty-five babies, Shirley (29) found that the children's rate of progress toward the ability to walk alone could not be speeded materially by special coaching and encouragement. Much the same seems to hold true also in the development of some of the basic coördinations underlying the use of the arm, wrist, and fingers (1, 8, 9, 10, 11, 12, 13).

Most of what can be done, educationally, to promote the motor development in the infant and young child consists in providing the child with opportunities to exercise and to practice his abilities according to his own interests and capacities.

EFFECT OF EARLY ENVIRONMENTAL IMPOVERISHMENT

Another approach is to study the extent to which a child's progress may be *retarded* when he not merely is deprived of special opportunities to learn but is even denied some of the contacts and stimuli which a child normally enjoys in his everyday environment. A study by Dennis (5) uses this approach. Beginning soon after birth, two girls were kept in a rigidly controlled environment until they were seven months old. They were kept in individual enclosures separated from each other by opaque

screens; they were always placed in a supine position after having been handled; they were removed from their limited environment only for a few experiments and for medical attention; they had no toys and were allowed no visitors; they were not propped up to a semisitting position when they reached the age when most children show an interest in exploring their environment; they were not smiled at, never played with; they received no show of affection, no rewards, no punishments, and were not even talked to except under experimental conditions.

The progress of these children up to the age of seven months, when their confinement was relaxed, and during later months, was compared with the norms of development of other children and was found not to differ substantially. Their progress fell within the normal range in the following: ability to hold the head up while lying in a prone position, hand-to-mouth reactions, ability to hold chest up while lying prone, ability to play with the hands, and ability to follow a moving object with head and eyes. In certain activities (sitting alone, standing with help, creeping, standing alone) that usually do not reach their full development until after the age of seven months (when the rigid schedule was relaxed), they lagged somewhat behind the norm, but not to a degree which the investigator regarded as significant. Even granting that some retardation might be traced to the conditions under which they lived, the important fact remains that such drastic deprivation seemed to have relatively little effect. To be sure, these observations are limited to two children, and the retarding effects of deprivation undoubtedly would become increasingly apparent, at least in a number of performances, if the regime had been continued well beyond the age of seven months; but as far as they go, the findings indicate that the small infant is not a creature who is entirely at the mercy of his environment and what it affords, as long as he is well fed and housed, free from disease, and has some freedom to exercise in his own way. The impulse to grow is strong, behavior mechanisms mature, and the child, in spite of lack of encouragement, finds means of exer-

cising his growing talents to some degree. It may be pointed out, incidentally, that the policy of rigidly restricting the environment was abandoned at seven months, not because demonstrable harm was being done, but because the investigators deemed it prudent not to continue it too long.

Among the most interesting findings in this study were those dealing with the children's social and emotional development. In normal development, a child only a few weeks old will react to the human face and voice by smiling, and later the child will laugh. In the present study, no one ever smiled at the infants or played with them. If ever children had a right to turn a glum face to their dead-pan elders, these children did. Yet these infants smiled and laughed aloud at substantially the same age as other children who receive much attention calculated to elicit smiling and laughter. Further, although no affection was shown toward the babies, they on their side met the experimenters with signs of affection.

STUDIES OF "TRAINED" AND "UNTRAINED" CHILDREN

A study by Gates (6) is the forerunner of several investigations in which the control-group method has been used with human subjects to probe the effects of special opportunities or exercises on children's progress in various performances. A number of studies of this sort will be reviewed in this chapter, including studies dealing with children who have passed beyond the age range on which our attention so far in this book has been centered. In many of these studies, efforts have been made to teach the child new skills or to use his abilities in new ways; in others the purpose has been to find the extent to which a performance that a child already has mastered to some degree might improve through the use and exercise that comes with frequent repetition.

A study by Gesell and Thompson (12) of a pair of twins measured the effects of early and deferred training in two activities. Beginning at the age of forty-six weeks, one twin was encouraged daily for six weeks to manipulate and to use cubes. In the mean-

time, the other twin, who served as a control, was deprived of training or encouragement in the use of cubes. At the end of the training period (at fifty-two weeks), the behavior of the two children in reaching for, manipulating, and exploiting the objects was highly similar; efforts to promote activities with cubes in one case and deprivation of such attention in the other did not appear to alter the course of development. The same twins were similarly used in a study of climbing. Beginning at the age of forty-six weeks, one child had daily opportunity and encouragement to climb stairs, while the other was denied any training.

Again it appeared that this activity was influenced more by factors attending normal growth than by special stimulation within the time limits of the study. At the age of fifty-three weeks, the control twin, without previous training, climbed the stairs unaided and rapidly reached as high a level of accomplishment as the twin who had received special attention daily for six weeks at an earlier time. Here it may be noted that the period of special practice on the one side and of deprivation of such practice on the other was relatively brief and that the performances were limited in scope, but this does not alter the significance of the findings, as far as they go.

Studies by Hilgard likewise bear out the general finding that, in some performances, a relatively short period of practice at a later period may yield more rapid gains than a period of practice at a somewhat earlier time. One of Hilgard's studies (16) dealt with three performances: buttoning, cutting with scissors, and climbing. The average age of the subjects at the beginning of the investigation was about twenty-eight months. After initial tests, one of the two paired groups received practice for twelve weeks. At the end of the twelve weeks, the control children were retested and then received intensive training for four days. During the practice periods, the experimenter tried in every way to help the child to use correct movements, to eliminate wrong methods, and to improve the speed and quality of his performance. Various devices were used to stimulate the children's interest and

to motivate their efforts. In the climbing experiment, the job was to climb three steps of a stairway and then to climb down again. In the buttoning project, it was to button together strips of cloth (in each case one of which contained the buttons and the other the buttonholes) which were graded in difficulty. In the cutting experiment, the child was supplied with a pair of scissors and was asked to cut along paths traced on pieces of paper. In these performances, as in most of the experiments in this field, the children who received practice over a period of time were superior to control subjects at the end of that period; again, however, as in numerous other studies, the control subjects rapidly overcame most of this advantage when they had a chance to practice.

At the end of the thirteen weeks covered by the study, there was a high degree of similarity between the children who had received twelve weeks of training and the control children who received intensive training only during the final week of the thirteen, although the former were still somewhat superior. Hilgard points out that the remarkable gains made by the control children during a short period of training, as compared with the slower gains made by their peers during the preceding twelve weeks, "suggest that factors other than specific training contributed to the development of" the three performances that were studied and that the "slight differences between the two groups at the end of the experiment" makes it evident that the factor of special training, although it had some effect, "was far outweighed by the general developmental factors." It may be noted in passing that the buttoning performance included in this study happens to be one that is of considerable practical interest in the training of young children, since buttoning (until the advent of zippers) has been quite an important element in the skills a child must acquire in learning to dress himself.

These same twin girls again served as subjects in a study of language development (Strayer, 30). Beginning at the age of eighty-four weeks, one twin was kept in a nonverbal environment, while the other received daily drills in naming objects and in the use of words. After five weeks of this, both twins were brought

together in a similar environment and received similar training for a period of four weeks. Three months later, both twins were tested again. The twin who had first received training had a definite advantage at the end of the first five weeks of the experiment, but when given an opportunity, her sister speedily began to reduce the difference; at the later period, the latter learned new words at a faster pace than had her twin at an earlier time. The child who received earlier training continued for some time to be superior in her pronunciation and her use of two-word sequences, but after three months the differences between the children were disappearing.

VARIABLE EFFECTS OF TRAINING

Two boy twins (Johnny and Jimmy), who were under observation from the time of birth until the preschool age, were the subjects in a number of experiments (McGraw, 25). At the start, Johnny served as the "trained" twin, while Jimmy served as a control. During the daytime, both spent their time in a hospital, where their activities could be supervised, but evenings and nights were spent at home, without supervision by the investigator.

It was found that the effect of stimulation and "training" varied in the case of different activities. Frequent stimulation of two reflexes (the Moro embrace and the grasp) which normally recede during the first few months of life did not materially alter their pattern or rate of extinction. The children were also similar in the developments leading to the ability to walk alone. In some activities, however, outstanding changes were induced by training at an early age. Johnny learned to roller-skate almost as soon as he was able to walk, and before he had reached the age of a year and a half, he was able to swim fifteen feet. (This represented the distance he could paddle on one breath; he had not yet learned to coördinate breathing with swimming when this feature of the study had to be discontinued.) Before the age of a year and a half, he had also made remarkable progress in climbing inclined boards and in getting on and off high places. His achievements

in climbing did not, however, materially alter the underlying pattern of his climbing as compared with other children. His climbing first began while he was in the creeping stage, and his climbing activities were "grafted" upon this creeping pattern; in scaling an inclined board, he gripped and pushed with his toes. Later, when walking displaced creeping as the normal mode of locomotion, there was a change also in the climbing pattern; the power of gripping and pushing with the toes waned as creeping gave way to walking, and where before he had pushed upward with the help of his toes, he now had to depend largely upon pulling himself upward by means of his arms. The exercise he had received in using his toes in climbing during the creeping stage did not transfer entire to climbing at a later stage of his development.

Although Johnny made progress in learning to roller-skate almost as soon as he was able to walk, he did not make much progress for some time in response to training in the use of a tricycle which began at almost the same period. It was not until several months later that he made substantial progress in learning how to propel it. Indeed, it appeared that the child suffered from the long and futile period of practice during the time when he was too immature to master the mechanics of tricycling. At twenty-two months, when the boy who had hitherto served as a control began to receive training in tricycling and some other performances, he mastered the tricycle in a shorter time than did his brother; but when he similarly received practice in roller skating, he failed to attain as much proficiency as his brother. It is possible that other children, under different conditions of training, might not exhibit the same amount of lag between the two performances, but at least as far as Johnny was concerned, one skill seemed to be ripe for training at an earlier age than the other. To be sure, this generalization can readily be verified in everyday life, but it would take more than superficial information to predict just what performances are most likely to flourish best at a given stage of growth.

It should be remembered, of course, that the mere demonstra-

tion that a particular skill can be promoted at a given age still leaves other questions unanswered, such as the question as to which skills might best be suited to the child's welfare as a whole at any given stage of his development.¹

Performance Four Years Later. A further study was made of the children at the age of six years, about four years after the termination of the main experiment (26). Both children maintained their proficiency in riding a tricycle. As neither had a tricycle at home, this suggests that this type of skill does not deteriorate materially with disuse, although it could not be determined how much practice the children might have had on borrowed wheels; moreover, a normal six-year-old masters a tricycle quite quickly, even if he has never ridden one before. In contrast, proficiency in roller skating began to deteriorate soon after the initial practice period. Partly by reason of changes in bodily proportions as they grew older (including relatively longer length of legs and a shift in the center of gravity), the children had difficulty in maintaining their balance on roller skates. It appeared that a gross motor skill adapted to the bodily structure of a toddler did not carry over entire to a later stage when bodily proportions were different, and that intervening practice (which these children did not receive, except on brief occasions) was necessary to adapt the performance to progressive bodily changes and to maintain it at a high level. In climbing up a steep slope the child whose training began earlier remained superior to his brother, but as the children grew older, both had difficulty in managing their longer legs. On the other hand, there was not a similar loss in proficiency in getting off a pedestal and in descending a slide; in these activities, structural changes in the body apparently did not require substantial readjustments in mode of performance. Also, in using boxes of different heights in order to reach a given altitude, the boy who received early training displayed greater skill

¹It may be pointed out in passing that, although there was marked superiority shown by the trained twin as compared with his brother in a number of performances, the two were substantially similar in their early language development and in their scores on mental tests before the age of two.

in climbing and in maintaining his balance on an unstable structure; the less skillful child, however, showed more care and discrimination in dealing with the boxes.

STUDIES OF OLDER CHILDREN

In a later study, the twins employed by Gesell and Thompson served as subjects in experiments that began when the children were fifty-four months old and ended when they had reached the age of sixty-six months (Hilgard, 15). The performances covered by the study included immediate memory for digits, memory for objects that were briefly exposed to view, tossing rings at a post (in an effort to make a ringer, as in the game of horseshoes), walking on narrow boards, and cutting. Again, in this study, one twin received training for several weeks immediately after the completion of the initial tests, while the training of the control twin was deferred until a later time. (Each twin received early practice in some performances, and served as the control in others.) Again the child who underwent the earlier and longer practice period made gains during training, the amount varying somewhat in the different performances; again the child whose training had been delayed gained at a more rapid rate than did the twin sister at an earlier time; "three and six months after all practice had ceased, the performances of the children on *all* tests were as similar to each other as at the beginning of the experiment."

The study of Gates (7), referred to above, dealt with children ranging in age from four to six years. In one experiment, speed of tapping was measured. After preliminary tests, the children were divided into two groups, one of which undertook special exercises in tapping several times a week for a period of six months. When measured at the end of this period, these children excelled the control subjects. Following this, there was a lapse of six months during which nothing further was done. After this, for a period of seventeen days, the children of both groups exercised the tapping performance. At the end of that time, the scores of the two groups were practically equal. In other words, the factor of growth, plus the effect of such motor experience as the control

children obtained in the normal course of their daily lives, enabled the control subjects to achieve in a short interval of time as high an average level of accomplishment as was achieved by children who earlier had repeated the performance many times a week for a period of half a year.

A similar procedure, with some variations, was used by Gates (6) in a study of the influence of exercise on immediate memory, including memory span for digits. Series of numbers, varying in length, were read to the children, who, in turn, tried to reproduce the numbers in the same order. Again tests were administered some months after a period during which one group had exercised this performance. In this experiment, as in the tapping experiment, the children who practiced the performance were somewhat superior at the end of the period devoted to practice, but this superiority proved to be temporary and was overcome by the control group within a relatively short time when the children were a little older.

The fact that the children who received special exercise did make substantial gains for the time being, as compared with the controls, raises the conjecture that increasingly wide differences between the two groups might have come about if special exercises were continued indefinitely with one group and indefinitely deferred with the other group. Quite as significant, however, was the trend of affairs after the practice periods were terminated and the children were left to themselves. Normally, as children grow older and receive only such incidental practice as comes to them in their daily experience, there is an improvement with the passage of time in the operations tested in these experiments. In this study it was found, however, that this normal rate of gain was not superimposed upon the level of achievement which the children had reached at the end of the practice period. If they had proceeded with the normal rate of gain from the point of achievement reached at the end of practice, they obviously would continue to be superior to control subjects. Instead, when all the children in the study at a later age undertook special exercises for a relatively short period, the control subjects rapidly "caught up."

Similar trends have appeared also in studies dealing with such performances as throwing at a moving target (14), color naming, and strength of grip (19).

Possible Effects of Long-Continued Differences in Training.

Two things stand out in practically all of the studies reviewed so far: first, the children who received practice for periods ranging from three to six months during the early part of each experiment usually excelled the control subjects at the end of this period of practice; second, the children whose practice was deferred and who accordingly were older when their training began made more rapid gains through practice when they did have an opportunity, and they overcame in a relatively short time most of the advantage gained by their peers during earlier, longer practice periods. The latter result is highly significant, but the former result also is important. Even though the gains accruing from earlier practice were slower than those accruing from deferred practice, the gains were none the less apparent. The fact that the control subjects would soon catch up when given a chance does not remove the fact that the children who received practice at an earlier time did have an advantage, at least for a while. In some activities, such an advantage, even if only temporary, might make quite a practical difference in the child's adjustment.

Furthermore, the results suggest that if training had been continued for an indefinite period with one group and had been postponed for an indefinite period with the control group, increasingly wide differences might appear between children who originally were equal. It might also be conjectured that, in some activities, these differences could become so pronounced that equal opportunities at a much later time might not overcome them, with the result that the children who enjoyed special advantages while younger actually, for all practical purposes, would remain permanently superior in the performances that were cultivated. This point has not been probed directly by means of controlled study, although the evidence in some studies suggests that a favorable

environment in one case and an unfavorable one in another may, as time passes, bring increasing differences that eventually, for all practical purposes, become tantamount to genuine differences in native equipment.

Practical Implications. Regardless of what might happen under this or that circumstance, we have the simple fact that, in some activities, a relatively short period of formal practice when the child is older seems to yield a higher degree of proficiency than does a relatively much longer period of special practice when he is younger. We also have the fact, as indicated earlier in this chapter, that this state of affairs does not hold true to the same degree in connection with all activities. This fact becomes significant when we consider that the things to be learned by a young child are practically limitless. Although a large part of a child's learning during early years comes incidentally in the normal course of his experience and requires no special facilities or instruction, many aspects do obviously require special provisions, and allow room for a good deal of choice. Roughly speaking, if three weeks of application at a somewhat later age yield as high a return as three months of application to the same project at an earlier age, the wise thing, if possible, is to defer this project in favor of another that might bring higher returns from the start.

It is in connection with guided learnings that research of the kind here under review might be of practical value, especially in connection with preschool and elementary-school education. That this is not an idle line of inquiry is indicated by results reported by Benezet (2) in a somewhat informal experiment with the curriculum in the elementary school. In this project, many of the formal operations involved in arithmetic were postponed far beyond the grade at which they are customarily introduced. In the meantime, freed from these assignments, the children were busy with other activities and subjects. According to the results reported by Benezet, the children rapidly mastered these delayed aspects of arithmetic when they finally were introduced as part

of the work in the sixth and seventh grades, with the additional advantage of what they had learned in other activities during the time they had saved in arithmetic.

The results of this study are quite suggestive, and they indicate the need, not only for confirmatory investigations, but also for systematic exploration of other projects in the child's early home training and in the older child's undertakings in and out of school.

Systematic findings in this area, especially beyond the preschool period of development, are relatively meager, but there are scattered findings that bear either directly or indirectly upon the problem now under discussion; many of these will be touched upon in later chapters dealing with the growth of understanding, social development, emotional development, and other topics. It may be said in passing that available evidence, while limited in scope, definitely suggests that some of the practices and emphases that have been fostered in connection with the "newer education," especially in the social studies in the early school grades, seem to have been quite unrealistic in the light of children's capacities to grasp the underlying concepts. Needless to say, research in this area is not a simple task, for findings as to the child's apparent readiness and ability to handle a given project or concept will be influenced not merely by the factor of maturation, but also, in complicated ways, by the type of education and previous experience he has had, not to mention countless other variables (17, 32).

EARLY TRAINING IN MUSIC

Illustrations of the manner in which children at a given age may be "ready" to advance on one front and not on others can be found in results obtained from studies of children's response to training in singing, rhythm, and instrumental music. In connection with one of the series of studies cited above (Jersild and Bienstock, 19, 21) the equivalent-group method was used to study the effects of training on children's ability to sing tones and in-

tervals. The subjects were quite young, ranging in age from thirty-one to forty-eight months (19, 21). Tests were first administered to measure the initial abilities of the children. In administering these tests, the experimenter would sound a given tone or interval on a pitch pipe, piano, or psalter, sing it, and ask the child to do the same. The child's performance was scored as correct or incorrect on the basis of the judgment of the experimenter, aided by the use of a pitch pipe and checked by coworkers who also were trained musicians. Following the initial tests, one group of children received special training, with a good deal of individual attention paid each child, for ten minutes at a time two or three times a week (barring vacations and illnesses) over a period of about six months. As practice proceeded, the children made decided gains in performance. These gains were larger than had been anticipated. Not long after the study had started many of the subjects became so proficient on the tests as originally planned that it became necessary to extend the tests by adding new tones and intervals.

In the tests administered after training, the practiced children were quite superior to the controls. Furthermore, although the mean age of the practiced children was less than four years, their average score in number of tones sung exceeded the average score of unselected eight-year-old children. When tested again some months later, after a summer vacation had intervened (with no special training in singing), the children who had received intensive practice were still well in the lead. To be sure, the control subjects also showed an increase in scores, and their performance on successive trials in the final series of tests indicated that, with some added training, they might soon overcome much of the difference that existed between them and the children who had received training at an earlier time. In other words, the results here do not prove that early training would give the practiced children an enduring advantage that could not be gained at a later time. The significant thing, however, is that the practice in singing, when administered to children so young, did have such a notable

effect. To all appearances, here was a performance which was quite ripe for training at an early age. In a later study, it was found that children of elementary-school age also responded with large gains to practice of the kind here administered. Moreover, the results in the case of individual children suggested that training might have quite a profound effect in helping the child to overcome the habit of using only a small part of his potential tonal range and in forestalling habits that might become fixed and lead the child to become resigned to being a "monotone." A study by Wollner and Pyle (33) likewise indicates that training in singing may have marked effect in overcoming seemingly quite severe inadequacies.

For all their obvious limitations, these findings suggest that training in singing at an early age can tap potentialities that are not usually utilized by the average child. A study by Updegraff and her associates (31) substantially confirms the findings reported above and goes several steps farther. Again, in this investigation, it was found that special training enabled preschool children to make gains in the singing of tones and intervals and also in the singing of phrases. What is more, evidences of interest and enthusiasm for singing, which were noted but not systematically studied in the investigation cited above, received special attention in Updegraff's study by way of systematic observations and ratings. It was found that the gains in children's ability to sing were accompanied by increased interest in singing.

Somewhat different findings have emerged from studies of certain other aspects of music. In a study by Colby (4), children aged three and one half to four and one half years made some progress in playing an instrument (a small tin fife) in response to training, but the gains were limited. The experimenter states that the investigation indicates that "specialized instrumental training at too early an age [preschool] costs far more patience than it is worth, and that the same amount of effort applied to *vocal* acquisition of folk-songs, folk-games, 'Kinderlieder,' etc., would produce greater results because it would capitalize on a natural

response and an easier technique" (page 428). In a study by Jersild and Bienstock (20), various mechanical paraphernalia were used to obtain precise measurements of the ability of children to keep time to the beat of music. Tests were made both when children walked to the accompaniment of music and when they tried to beat time with their hands. Measurements of children aged two to five years and of a limited number of adults revealed large age differences in this ability. Again, in this study, a selected group of young children received special practice. They were brought to the music room, where the piano was played for them; the experimenters called attention to the beat of the music, clapped their hands to emphasize the beat, and walked with the children, accenting, with hands and feet, the beat of the music. In response to opportunities of this sort, approximately equal in number and duration to the periods devoted to training in singing, the children made some gains, but these gains were relatively small as compared with the gains in singing. It can be seen, in connection with this study, that training in this situation presented difficulties, for no matter how eager a child might be to improve his performance, it was difficult for him actually to see or to appraise the amount and direction of his errors. However that may be, the findings indicate that training in rhythm at the preschool age should not be undertaken primarily to improve the child's precision in keeping exact time to music. According to the results in a subsequent study, experience with rhythm at this age may, however, have the effect of promoting the child's response to rhythm in other ways, by way of stimulating his interest and participation and by way of encouraging him to improvise step and dance patterns of his own (3).

MATURATION AND EXPERIENCE IN SOCIAL AND EMOTIONAL DEVELOPMENT

As will be set forth in later chapters, distinct developmental trends can be noted in various aspects of the child's social and emotional development, but in connection with these developments it

is even more difficult to distinguish between growth and learning factors than in the case of certain aspects of motor and mental development. In the development of social behavior in the age range from two to four years, for example, there normally is an increase with age of a child's "social" activity, as distinguished from "solitary" or "parallel" activity, when he is with a group of children of his own age. Now, this matter of social participation of course involves a large number of complex factors, including experiences of various kinds, but it appears that the effect of experiences with other children is to a large extent relative to the child's general level of maturity. In a study by Jersild and Fite (22), comparisons were made between children in a nursery-school group, some of whom had previously had the experience of attending nursery school for one or two years and some of whom were now attending for the first time. Even though the latter had not previously lived in a social vacuum, they at least had had considerably less opportunity to practice social dealings with other children than those who had attended nursery school during one or two preceding years.

At first there was quite a large difference between the amount of social participation¹ of the veterans and the new children; the veterans spent almost twice as much of their time in social contact as did the neophytes (an average of forty-eight per cent, as compared with twenty-six per cent). But the new children quickly began to overcome this difference, and when records were taken in the spring, the two groups were almost exactly equal (both spent an average of about fifty-eight per cent of the time in social contact). In other words, the new children, when given an opportunity, hit the stride of more experienced children of their own age relatively soon and at the end of one school season they functioned at the level attained by other children who had attended that season plus one or two preceding seasons. We have here a result somewhat analogous to findings

¹ Percentages were determined by the number of thirty-second intervals during part or all of which the observed child was in "social contact" with one or more children.

reviewed above concerning the manner in which children catch up with the motor and linguistic performance of previously trained children. To be sure, this study deals with only a limited aspect of social behavior, and it is possible that the inexperienced children would not catch up if they had been denied all contacts with others or if corresponding conditions were studied at the age range from six to ten rather than from two to four years.

The effects of the maturation of a child's motor and intellectual powers can also be noted in connection with a child's emotional development (23, 24). Evidence on this point will be discussed in a later chapter.

THEORETICAL CONSIDERATIONS

In connection with the general problem of learning and growth, a study by Mattson (27) yields findings that are noteworthy from a theoretical point of view. The subjects were nursery-school and kindergarten children who practiced solving mazes of varying degrees of complexity. Time and error scores were kept while the child rolled a ball over the path of the maze toward the goal. Following the initial tests, one group of children received practice for twenty-six days; thereafter, both the practiced and the control children were tested; after the retests, nothing was done for the next sixty days, at the end of which a further series of retests was administered. The children who received practice were superior to the controls at the end of practice and again after the elapse of sixty days. The superiority on the final retests varied, however, with the complexity of the maze; the practiced children maintained only a slight superiority on a simple pattern, but their superiority was quite marked on a pattern of intermediate complexity and still more marked on the most complex pattern. Mattson also found that individual differences in ability in solving the maze tended to *decrease* with practice on the more simple patterns and to *increase* with practice on the more complex patterns. That training is likely to have a more outstanding effect on "complex psycho-motor functions" than on "elementary"

functions is maintained also by Mirenva (28) in conclusions drawn from a less carefully defined study in which four-year-old children who received training in jumping, hitting a mark by throwing a ball, and hitting a mark by rolling a ball were compared with control subjects.

Although the studies reviewed in this chapter are quite numerous, they are decidedly limited in scope, not only as regards the specific activities that have been covered at various ages, but also as regards the possible effects of training as compared with deprivation of training over an extended period of time. Some of the performances that have been studied have been related in a more functional way to the child's own everyday activities than have others. Even so, it should be possible to summarize the results in terms of certain generalizations or hypotheses, but actually, none of the summary statements so far proposed in writings on this subject offers a generalization that is at once adequate as a theory of development and as a practical, educational guide.

Some generalizations that have been made or might be offered follow. Growth, within a normal environment, is relatively more influential than opportunities for special training or exercise in determining the emergence and rate of development of certain modes of behavior that are so universal as to appear to be part of our racial inheritance. Examples of such behavior are the reflexes that appear during early infancy and the basic patterns of movement involved in locomotion and prehension. On the other hand, learning plays an important role in the acquisition of performances and skills of a more individual and optional character (such as roller skating versus walking). Growth is important in determining the development of new capacities and powers and in setting limits to what can be mastered or learned, while learning is important in determining the manner in which potentialities will be realized and the extent and ways in which capacities and abilities will be put to use. Opportunities for learning are likely to have less effect on activities of a relatively simple and elementary character than upon performances that are more complex. From

the point of view of understanding children, however, and especially from the point of view of what can be done to foster their development with a minimum of inconvenience to all concerned, the most promising approach in the future will be by way of further empirical research.

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CHAPTER III

ROUTINE PHYSICAL HABITS IN EARLY CHILDHOOD

Eating, sleeping, and elimination are three of the major activities of the young child, and they continue to be important occupations throughout life. In proportion to their importance, these occupations have received scant attention in psychological research, although they have received due emphasis in manuals on child rearing. In studies of adults, considerable attention has been given to sleep and some to eating; most neglected, except on the somewhat abnormal and morbid side, is the homely and supremely honorable subject of elimination.

As noted earlier, the young infant spends more time on the job of sleeping than on any other project. By the time the child reaches school age, he is still spending about half of each twenty-four hours in sleep; by the time he is eighteen, and from then on until death, he devotes about one third of his time to sleep. In the meantime, his sleeping habits have received a good deal of attention, first from his parents and later from himself. Even more demanding of attention, during early years, are the functions involved in getting nourishment and eliminating waste. The infant's stomach contracts with hunger; he cries, squirms, and thrashes until he is fed. Then he dozes off again, but soon his belly is empty, and once more he cries for food. In the meantime, he periodically voids his bladder and his bowels. In due time, this natural flow of events is drastically changed. Where before the child need only suck, he now has to chew for a living, and his eating becomes regimented in countless days. The processes of elimination, which at the start were completely vegetative and involuntary, are brought under control, usually with considerable aid from his diligent mother. No aspect of a child's

development more sharply illustrates the joint influence of maturation and learning. With the maturing of the child's nervous system and other organs, processes that earlier were governed completely by autonomic nerve centers now, in part at least, come under the rule of higher centers, as the brain assumes a degree of jurisdiction over the bladder and the bowels through the establishment of numerous habits and routine acts that have been learned.

EATING

One might expect that the establishment of good eating habits would be the easiest feature of a child's training, for the drive to obtain nourishment is perhaps the strongest drive in living creatures. As one can verify in everyday life, however, children's feeding habits often give a good deal of trouble. Obviously, the more a child's diet and eating routines can be based upon natural wants and rhythms, rather than upon a conglomeration of rules and formulas, the smoother the road is likely to be. Likewise, the more nearly demands placed upon the child, such as the change from liquids to solids, weaning, the motor skills involved in handling cups and other utensils, and the niceties of eating behavior, can be scaled to the child's growing capacities, the better the outcome is likely to be.

To find what is natural as regards wants and appetites and the abilities underlying the skills involved in eating, unfortunately, is no simple task. There are differences between individual children with respect to needs, tempo, and rate of progress in acquiring the abilities involved in self-help in eating. Quite as important a complication is the fact that the child's natural tendencies, whatever they may be, often come into conflict with customs, parental attitudes and habits, which are associated not only with feeding as such, but also with all other aspects of the child's daily relationships with his parents.

Suckling. In the average newborn child, the impulse to suckle is so strong that the baby's nutritional needs are easily met by

giving him the breast or the bottle. To be sure, there are occasional babies whose sucking responses are inadequate, and even in the normal child there are modifications in the sucking mechanism after the child is born; but usually there is a high degree of efficiency in sucking from the very beginning. Indeed, as we have seen in an earlier chapter, sucking activities are so easily aroused that they may not only occur when an object is inserted into the child's mouth or is brought into contact with his lips but may even occasionally appear as features of mass movement when the child's toe is pinched or when his hair is pulled.

An interesting description of suckling and of the mechanism involved in suckling has been given by Gesell and Ilg (14). These investigators point out that the physiological make-up of this mechanism gives it a rather privileged position; for example, the chemical composition of the fat in suction pads in the cheeks, which play an important part in the act of suckling, is such that the fat is not readily absorbed and the pads "persist even in the emaciated infant after fat has disappeared from other parts of the body" (page 25).¹ Likewise, the nerve center for sucking is "peculiarly rich in its blood supply. So rich is the blood supply that, when the higher cortical centers are irreparably damaged from asphyxiation, as in the ischemia of prolonged labor, the sucking reflex may nevertheless escape injury" (page 25). However, sucking may be weak or absent in cases of primary mental deficiency, impairment of the nerve centers during early developmental stages, or as the result of certain types of birth injury.

Gesell and Ilg point out that, although the sucking mechanism is comparatively well developed and is highly protected, it has not reached its full development at the time of birth. There are changes after birth in the structures involved, and there is an in-

¹ Gesell, A., and Ilg, F. L.: *Feeding Behavior of Infants* (Philadelphia: J. B. Lippincott, 1937), 201 pp. The author is grateful to J. B. Lippincott Company for permission to quote excerpts from this book. The findings here reviewed refer to only a small portion of the empirical data and practical recommendations set forth by Gesell and Ilg, and readers who are interested should consult the book.

crease also in the nerve supply of the lips. Although quite capable of closing his lips onto the nipple, the newborn child often drools and leaks at the corners of his mouth, by reason of imperfect co-ordination between lips and tongue and the fact that the angles of the lips are not as completely supplied with nerve endings or as completely under control as are the median portions of the lips. Likewise, the neonate's suckling and swallowing movements are closely merged, so that unswallowed milk runs out of his mouth when he releases the nipple. During the act of nursing, he also swallows a good deal of air, and feeding may have to be interrupted to give him an opportunity to belch. As he grows older, and nursing becomes more proficient, less air is swallowed and the need for belching diminishes.

Sucking Activities Apart from Food-Getting. Although the infant's sucking and mouthing at first serve primarily the purpose of food-getting, they soon play a larger role. The impulse to suck may become relatively independent of the process of feeding, so that sucking becomes an activity which seems to be undertaken for its own sake and the baby sucks even though his appetite for food is sated. It would almost seem that the mechanism of sucking has a drive of its own. Many babies do a certain amount of sucking, apart from nursing, almost from the time of birth. The act may be most prominent when the child is hungry and may continue immediately after he has been fed. A case has even been reported of an infant who, to all appearances, had sucked his thumb before he was born (14). The baby's thumb was swollen on delivery, and soon after the birth cry he placed the swollen thumb in his mouth. Although there are differences in time of onset and in amount, all babies are likely to suck their fists, fingers, and thumbs at some time or other during infancy. In the period preceding the eruption of the first tooth and throughout the period of teething, the hand is brought to the mouth a good deal, and there is much mouthing of the fist. In many young children, there are recurrent periods of finger sucking; a child may cease

to suck for a time and then do so again more vigorously than before. Many children, as is well known, continue the finger- or thumb-sucking habit for several years.

We do not have sufficient information to judge to what extent such sucking, independent of food-getting, arises from an imbalance between the exertions involved in getting food and the child's impulse to suck that might be avoided. It appears that a child's independent sucking is influenced to some degree by the amount of sucking exercise he gets while feeding. Observations that have been reported by Levy (16) are interesting in this connection. He notes that a baby may show a desire to continue sucking even though his desire for food seems to have been satisfied. This may be especially true if his needs for food are quickly satisfied with a minimum of exertion. For example, if there is a large aperture in the nipple, so that the milk runs freely and his appetite is soon satisfied, the child may be more likely to suck his fingers, his blanket, or some other object than if the nipple has a small aperture and requires more exertion and a longer period of sucking before the milk is gone. By way of analogy, Levy gives the example, familiar to everyone who has been raised on a farm, of the behavior of young calves. A dairy calf which is not allowed to suckle its mother but is taught from the start to feed from a pail is likely, for some time after being fed, to suck an accommodating finger or the ear or tail of another calf or any other object that is handy. To be sure, such continued sucking may be due to the fact that the pail-fed calf probably gets smaller rations than a suckling calf, but at any rate the sucking will continue when even the calf must realize that there is not much nourishment in it. Such sucking by the calf seems to correspond, at least in some respects, to thumb sucking in the child, although in the child's case the sucking is likely to be more persistent and the habit may be influenced by many factors which do not bother the average calf.

In his discussion of thumb sucking, Levy also gives the example of a child who took to sucking his thumb when one bottle feeding

was dropped from his daily schedule and discontinued the sucking when this feeding was resumed. It does appear that a lack of balance between the exertions involved in getting sufficient food and the infant's impulse to suck may contribute to thumb sucking, but the habit of thumb sucking, especially as the child grows older, is complicated by so many influences that attention to this factor alone would not solve the problem.

Sensory Functions of Mouth and Lips. In addition to sucking that is carried on apart from food-getting, the lip and mouth apparatus serves another function which is only indirectly connected with feeding. The child's first active contacts with his environment come largely by way of his mouth and lips. Even after he has become alert to sights and sound, he continues for a long time to make considerable use of mouth and lips in exploring the world about him. When he has acquired the ability to bring objects to his mouth with his own hands, there is a period during which he tries to carry to his mouth practically everything he can grasp.

Occasionally some of the infant's early expressions of rage occur when he is thwarted in this endeavor, either by others or by his own ineptness. Although such activities seem to stem originally from food-getting impulses, they appear to extend beyond that purpose in time. Not only will the child cram a block into his mouth, but he may try to swallow balls of lint, bits of earth, or morsels of food that have fallen to the floor after refusing what remains in his own plate or dish. Sometimes it almost appears that one of the infant's missions in life is to discover what portions of the world are edible and to explore with his mouth the texture, taste, and contours of inedible objects.

Hunger Rhythms. The intervals between hunger and satiety are considerably shorter in the young infant than in the older child, but fortunately for the convenience of adults, the normal infant's periods of hunger tend to be fairly regular, rather than erratic, so that the child's feeding can be arranged more or less according to schedule. Although the baby himself, at an early age, can go far toward "learning" to adapt his hunger to a schedule,

it is important to take account of the child's own rhythm in fixing the time that elapses between feedings according to this schedule and to vary the schedule as the child grows older. A schedule, say, of a feeding every four hours during the first two weeks may be quite unsuited to the individual child.

In the study by Gesell and Ilg, careful observations were made from day to day to note the "spontaneous self-demand schedules" of healthy infants during the first year of life (14). Records were kept of times of feeding, food intake, and sleeping, with supplementary notations of complicating factors. Feedings were arranged to correspond as closely as possible to the observed demands of an infant who was allowed to shape her own schedule. The records tell an interesting story of progressive change in the child's own schedule of eating and sleeping, with occasional fluctuations that marked the transition from a previous routine to a change in number of desired feedings and length of rest and sleep periods. The following summary is based upon a chart in which the investigators show one child's schedule on a given day each week.

At three and four weeks, there were seven feedings; after some fluctuations during the ensuing days, with six feedings one day and seven on each of the next two days, the infant settled down to six feedings at about five weeks. The six feedings per day lasted for two weeks, when, at the age of eight weeks, the infant demanded five feedings per day. In the transition from six to five feedings, two previous feedings in the early morning (one at about two to four A.M. and another at about six to eight A.M.) were merged, so to speak, but the exact time when the feeding was demanded varied. At nine and a half weeks, the infant spontaneously omitted a feeding that previously had occurred with a good deal of regularity at eleven P.M. and, along with this, she demanded to be fed earlier in the morning and also demanded an additional feeding between noon and late afternoon.

The omission of the eleven-o'clock feeding continued until the age of eleven and a half weeks, when the investigators for a time departed from the practice of suiting the schedule to the child's

own demands and sought to reestablish the eleven P.M. feeding, in the hope that the baby would delay her early morning feeding to a more convenient hour. This plan did not work, however. The eleven-o'clock bottle was "amiably accepted, though not demanded," during the six weeks of this experiment, but the baby continued to wake up for an early morning snack. When the experiment was discontinued, the baby slept through the eleven P.M. feeding time as she had before, and it was not until the age of twenty-eight weeks that the baby consistently waited until six A.M. for her morning feeding. Before that age, however, there were fluctuations toward the six A.M. hour; on some days the baby would awaken at about six, or even a bit later, and then revert to an earlier hour. As weeks passed, these fluctuations narrowed, and in her own good time the child, of her own accord, abandoned demands for food during the ungodly early morning hours.

Intimately associated with shifts in the child's feeding schedule were changes in the waking and sleeping schedule. Although there were fluctuations from day to day, there was a steady diminution with age in the duration of daytime sleep, and an increase in nighttime sleep. With advancing age, there also is less frequent alternation between sleeping and waking.

The description above of the feeding schedule of one child cannot, of course, be regarded as typical for all children. The number of feedings demanded during the day, the time of day when these demands occur, the fluctuations that may occur from time to time, and the trend toward fewer feedings as time passes will vary with different children. If the feeding schedule is to be suited to the child's apparent wants, it obviously is necessary to study the individual child, rather than to impose a fixed schedule that is governed by the clock rather than the child. When time allows, it is possible to establish a tentative schedule and then shift or adjust this in keeping with the child's needs. The business of adjusting schedules to the child's own inclinations does, of course, involve many practical complications. No matter how much the parents may desire to adjust the feeding schedule to the child's wants, they

must perforce give some consideration to the convenience of the household and their own endurance. Unless an adult is free to attend the child continuously, there inevitably will be some discrepancies between the time of hunger and feeding.

However, sometimes the management of feeding schedules is complicated by academic principles or rules of child rearing, including rules as to the importance of regularity, consistent routines, and injunctions against "spoiling" the child. On this point it may be said that no child has been spoiled simply by being fed when he is hungry, even if his hunger happens to occur at inconvenient or somewhat irregular times. If he is spoiled, it is by reason of other attentions, not by reason of being fed. To be sure, a child may in time learn to demand food as a means of gaining attention. But from observations such as those reviewed above, it appears that the child, when placed as nearly as possible on a "natural" routine, does not seek to perpetuate the attentions that he receives in connection with his frequent feedings when he is a young infant. Rather, he contentedly dispenses with one feeding after another. When he has no craving for food, he seems to treasure his sleep during the midnight and early morning hours just as much as does his tired parent.

The Development of Chewing and Self-Help in Eating. The newborn child is structurally better equipped for suckling than for chewing, not merely by virtue of his lack of teeth, but also by virtue of the formation of his jaws. His lower jaw is poorly developed. Biting is usually not prominent until about the fourth month, although it may appear considerably earlier. Gesell and Ilg observe that occasionally children, even at the time of birth, show "surprising strength of bite" and add that "this strength is not only unseasonable but unsuitable to normal suckling" (14, page 28). Chewing movements likewise may appear even before a child has any teeth and may precede by a considerable time the actual chewing of food. In Bühler's inventory of the behavior development of infants (4) chewing is noted at the sixth month; the ability to chew well, in connection with feeding, is placed at

forty-four weeks, but at that age the child is not able to masticate all foods; the ability to chew unground meat well is placed at eighteen months.

The development of self-help in eating obviously depends to a large degree upon the child's motor development, since it involves postural control, the ability to reach, grasp, and to convey objects to the mouth. The following account shows the approximate age at which various features of self-help in eating develop. Actually, the summary much oversimplifies matters, as do all summaries that show norms of development, for the various levels of performance overlap, and each advance is anticipated by movements that are refined and perfected with the passage of time. Moreover, in view of large individual differences, the summary may differ considerably from the progress shown by an individual child.

The sequence of events leading up to self-help in feeding actually begins long before the child endeavors to handle a cup or a spoon. One notable change that takes place during early months is an increase in active participation in the feeding process. Soon after birth, the infant may suckle even when asleep; apart from crying and other activities that signify hunger, he plays a relatively passive role and must have aid in finding the breast, but as time passes, he takes an increasingly active part.

In studies of the sequence of development involved in the ability to handle a cup, Gesell and Ilg note that, at twelve weeks, the average child will take notice of the cup but is unable to grasp it; his movements are jerky, gross and lacking in direction. "At sixteen weeks the normative infant contacts the cup; at twenty weeks he makes a corraling approach upon the sides of the cup; at twenty-eight weeks he grasps and lifts it, usually with both hands" (page 44) at thirty-two weeks he grasps the handle; but it is not until thirty-six weeks that his manner of lifting the cup in an upturned position, grasping the handle, and mouthing the rim approximates the true raising of a cup to the lips for drinking purposes. Although he thus manipulates the cup, at thirty-six

weeks his "concept of the cup as a utensil and as a receptacle is still in a very rudimentary state . . ." (14, page 44).

Gesell and Ilg similarly describe sequences in a child's handling of a spoon, showing various levels of performance, beginning with regard for the spoon at sixteen to twenty weeks. Although the child exhibits much activity both with spoon and cup for a long period, it was not until fifty-two weeks that the average child in this study brought the two into combination and definitely began to treat the cup as a receptacle and the spoon as a tool to be inserted into the cup. Well-defined self-management of the cup was not observed in the typical child until about sixty-five weeks. He now tilted the cup as it emptied, but by means of his palms; not until later did his fingers assume the main role in tilting. An indication of the complexity of the act of drinking from a cup can be gathered from the fact that the act calls, not only for skillful manual control, but also coördination of hand and finger movements with respiratory movements and rhythmic action of the tongue (14).

The child is likely to exhibit a good deal of natural finger feeding during the second year, while the development of ability to use cup and spoon is going on, and unless he is curbed, his hands and fingers will come into play a good deal for a long time thereafter. Use of a blunt fork may be expected at about two to three years, of a blunt knife between the ages of three and five, and of the knife for cutting at five to six (25). In the process of acquiring skill in self-help, there will obviously be a good deal of awkwardness, spilling, messing, dropping of utensils, and the like. The provision of opportunities to practice eating skills obviously carries with it the necessity of giving the child a chance to make mistakes. Moreover, in these skills as in other developments, a child may not follow an invariable course of constant improvement; he may show a momentary advance, only to revert for a time to an earlier form of behavior, such fluctuations being a part of the normal sequence.

The summary below illustrates an aspect of one of the many

skills related to self-help in feeding. It is based upon observations of nursery-school children in the act of pouring water from a pitcher into a small glass. The performances of the children were roughly classified according to four levels, as indicated in the summary, which is adapted from Slater (23).

TABLE I
LEVEL OF PERFORMANCE AT VARIOUS AGE LEVELS IN
POURING FROM A PITCHER¹

Level of Performance	Number of Children at Each Level of Performance at Each Age						Total
	2 yrs.	2½ yrs.	3 yrs.	3½ yrs.	4 yrs.	4½ yrs.	
Water goes all over the table.....	3	5	3				11
It goes into the cup, but overflows it..		8	7	2	1		18
Wobbly control, some spilling, stop before overflow.....		6	12	6	5		29
Firm, easy control; little spilling....		1	8	7	7	4	27

The above summary indicates that, in this particular group of nursery-school children, it was not until the age of three and a half that the median child had accomplished good control, with little spilling, in pouring water from a pitcher into a glass. At the age of four years, there still were several children whose performance was quite unsteady. Before the age of three, a majority of the children were quite unskilled in the performance, but this did not deter them from trying. It is characteristic of the young child, in connection with the motor skills involved in eating, that he will try his hand with the various utensils before he has the necessary neuromuscular control to master the performances involved. Unless he is restrained, he practices the operations; and this practice goes on apace with the maturation of the underlying mechanism. Both the learning and the growth process must receive due recognition. Attempts to force his progress and

¹ Adapted from Slater, E.: *II Types, Levels, and Irregularities of Response to a Nursery School Situation of Forty Children Observed With Special Reference to the Home Environment*, Studies from the Center for Research in Child Health and Development, School of Public Health, Harvard University (Washington, D. C.: Monographs of the Society for Research in Child Development, 1939), Vol. IV, No. 2, 148 pp. Reproduced by permission.

demands for a degree of skill that is beyond his power are undesirable, just as are undue efforts to prevent him from trying his hand for fear that he will spill and drop things.

Food Selection and Consumption. The foregoing stresses two aspects of the principle that feeding should be adjusted as far as possible to the "natural" bent of the child. The question now arises to what extent can the child's own "nature" be trusted in the matter of the selection of proper foods and in the matter of amount of food consumed? This question touches not only upon problems of nutrition but also upon an aspect of child-rearing which often is the source of much concern and friction when the child reaches the weaning stage and begins to consume a variety of foods.

Findings obtained by Davis (6, 7, 8, 9, 10) in studies of the diets selected by infants themselves during the weaning period and thereafter are interesting in this connection. The children in Davis' study, which was conducted in a hospital, included infants who had just reached the weaning stage and were allowed to select their own diets for periods of several months as well as older children in the hospital wards. The children had several choices at each meal, but all of the items in the total menu were not presented at a single meal. Following is a sample tray in one series of experiments with three newly weaned babies: lactic milk, whole milk, cooked marrow, raw beef, cooked beef, chicken, sea salt, ordinary salt (no foods were salted, but the child was free to take salt as he pleased), raw carrots, cooked turnips, cauliflower, crisp rye crackers. The twelve items represent a selection from a larger list of over thirty items which were variously combined at different meals. The children were left free to choose; food was not offered to them or suggested; the nurse simply sat by and helped the child to get what he wanted, as he indicated his wants by pointing, reaching, opening his mouth to receive food previously pointed out, and in other ways. As far as they desired or were able, the children were permitted to feed themselves by means of their fingers and to wield their own spoons.

Davis shows in some detail the items and amounts included in the intake from meal to meal and from day to day. There were wide variations in the self-selected menu of the same child from time to time and in the menus selected by different children. The selections often were thoroughly unorthodox and sometimes staggering, but physical examinations and measurements showed that the children made wholesome choices and thrived. Some illustrative findings and observations are reviewed below. The reader is referred to the original studies for more complete details.

When the experiment was begun with newly weaned infants, each infant at first chose some foods which he spat out. The factors that determined initial choices could not readily be determined. After the first few meals, however, the infants chose foods promptly without regard to their position on the tray, and there was not the subsequent spitting out which had occurred at the start. At a given meal, a youngster would often select a bizarre diet, including as many as seven eggs at a single sitting (in another series of observations, a two-and-a-half-year old child ate ten eggs at one meal!) or as many as four bananas. Salt was taken only occasionally, and often when taken the infant would splutter, choke, and even cry, but he would refrain from spitting it out and would later repeat the performance with the same spluttering.

Some infants tended to eat certain foods in waves: after eating given articles—such as fruits, or eggs, or cereal—in moderate amounts, there would follow a period when larger and sometimes “astonishingly large” amounts were taken, followed in turn by a decline to the previous level. Symptoms of overeating did not appear in connection with such “jags”; nor were they followed by periods of disgust. The children were omnivorous, and their preferences were unpredictable. They showed no consistent preferences for cooked or raw foods, but some items were definitely preferred cooked and others raw. Spontaneous dunking of hard crackers in milk or water was observed, especially at periods when a new tooth was erupting. The infants tended to take their foods “straight” rather than to mix foods or even to pour milk

over cereals. One infant who had active rickets when the study began spontaneously consumed large quantities of cod liver oil, and then later left it untouched when this active condition had been overcome, as revealed by blood tests and X-ray examinations.

In a later study, Davis reports observations made of fourteen children in a hospital nursery who selected their own diets during periods ranging from six months to four-and-a-half years. The findings in this series of observations conformed to those noted above, and the children, for all the vagaries of their appetites and occasionally grotesque choices, were wise in their choices as far as could be determined by records of their digestive balance, health, energy, and growth. A number of highly suggestive items, on the practical side, emerged from these observations. In their first efforts at feeding themselves, the babies would try to eat in many different ways: they put their faces down into the dish; sometimes tried to lap up food as does a dog; lifted the plate and tried to pour food into the mouth; clenched food tightly in the fist and carried it to the mouth while the grasping reflex was still present, so that they were unable to release and insert the food into the mouth. In their first efforts to use a spoon, the spoon usually reached the mouth upside down, and the food was spilled. In his first exploits, it usually was not until after he had appeased his first hunger pangs that the infant would experiment with the spoon. The children's choices sometimes caused anxiety for a time, as when two youngsters for several months took no milk (and then rather surprisingly began once more to drink milk in normal quantities). The program of self-selection did not produce chronic feeding problems; nor was there evidence that the children were becoming "spoiled." They did not abuse their privileges by demanding certain items and rejecting others in such a manner as to interfere with their health.

The findings in these studies by Davis are very illuminating in connection with the question as to how far a child's "natural" feeding impulses can be trusted. It would, of course, be ill-advised to generalize too sweepingly on the basis of such observa-

tions. The number of subjects was relatively small, the age range relatively limited, and the experiment dealt with children under institutional care. More extensive investigation would be required to supply the basis for a feeding program designed to meet all contingencies, especially in the home environment.

The evidence in Davis' study, as well as in other observations indicate that a young child has more sense about eating "what is good for him" than he often is credited with, granted that he has wholesome articles of diet from which to choose. Among the many significant observations in these studies is that a nutritionally balanced diet is not something that need be supplied by an arbitrary package of so much of this and so much of that every day. The balance can be achieved over longer periods of time. Recognition of this fact alone no doubt would spare many parents a good deal of anxiety and many children a good deal of irritation.

Interesting as the above findings may be, their application in the case of a given child is not so simple. In the individual home where means and time are limited, the provision of a variety of articles of food would be difficult (18) although a variety offering many different choices of alternative items to provide a complete diet need not be presented at every meal. To inaugurate a self-selection program in the average, busy home would involve many complications and, in order to be properly safeguarded, would require a good deal of knowledge about nutrition (20). Another serious complication is the fact that a child's appetite, his eating, and his "feeding problems" do not occupy a little compartment of their own but are influenced by attitudes and habits that have been established apart from the eating situation.

Introduction of New Articles of Food. Even under the most "natural" conditions, children are likely to exhibit food preferences at an early age. Various factors seem to play a part in such preferences, including taste, texture, and consistency; and in some cases there may be an organic aversion, as in allergic conditions. Some articles may be quite generally disliked as compared with others (2, 14), but there are pronounced individual differences.

When a child shows aversion to a food, it obviously would be well to know the cause, especially if the item represents a convenient means of supplying an important feature of his diet. Undoubtedly, food aversions may occur at an early age by reason of fortuitous associations rather than by reason of a "natural" dislike. However, the passage of time, rather than a program of reëducation, solves many of the problems of the young child. Just as children differ from one another in their likes, so also the same child will show shifts in his preferences from time to time. It also has been observed that a child may show dislike for a new article of diet when it is first introduced and then spontaneously acquire a liking for it if it is made available from time to time and no effort is made to coerce him.

Parental Influences. As children grow older and observe the example set by others, their food preferences are influenced more and more by the attitudes and idiosyncrasies of their parents. In a study by McCarthy (17) of forty-eight children aged two to seven-and-a-half years, inquiries were made concerning the eating habits and food aversions of children and their parents. It was found that the parents' food dislikes were reflected in the behavior of the children to a much larger extent in the case of children who were "problems" than in the case of children who were regarded as normal. As would be expected, preferences and dislikes were exhibited by the children who were normal as well as by children who were "feeding problems." Moreover, children in both groups shared many preferences and aversions with other members of their families. It was found that dislike for a certain food on the part of a member of the family was a frequent reason for not offering the food to the child, regardless of what his own attitude toward it might be. Food aversions on the part of members of the family were associated with thirty-five per cent of the children's food aversions. In the case of the children who were problems, forty-seven per cent of the foods disliked or refused by a member of the family were also disliked by the child; the corresponding

percentage in the case of nonproblems was twenty-seven. The effect of family influences on food habits is further brought out in a study by Campbell (5) in which the later food habits of children who had attended nursery school were compared with those of a control group. There was little difference between the two groups. The food habits of children from the same home were found to be similar, even if one child had attended nursery school and the other not.

The foregoing statements concerning food preferences have touched also on the subject of amount of food consumed. There are large variations among children in amount of food taken, and the same child may vary considerably from time to time (just as do adults), not only in total intake, but in the amount he consumes of a given dish. The "clean-plate" slogan, including the demand that he always polish off a given helping of vegetables and meat before launching upon his dessert, may suit the minds of methodical adults, but it does not always suit the needs of children.

SLEEPING

As already noted, the newborn child spends most of his time in sleep; at times he exhibits a somnolent state in which it is difficult to tell whether he is fully asleep, but at least he is not fully awake. Periods of complete wakefulness are brief, and periods during which he is fully asleep also are considerably briefer than is the case later on. As time passes, periods of wakefulness increase in length, especially during the daytime hours, and periods of uninterrupted sleep likewise increase, but the total amount of sleep diminishes steadily, although with many fluctuations. If placed on an arbitrary schedule of feedings which does not correspond to his own spontaneous demands, he often must be awakened to be fed, and sometimes he nurses or takes the bottle while remaining in a rather sleepy state. There are individual differences between infants both in sleep rhythms and in amount of time spent in sleep.

Table II shows the approximate average amount of time spent in sleep at various age levels from one month to eight years. The averages are based upon results for all seasons combined and are therefore described as "approximate," since the amount of sleep varies with the seasons; it is greatest in winter and smallest in summer. The table is based upon studies by Foster, Goodenough, and Anderson, who, through the coöperation of parents, obtained about a thousand records of children's sleep for each day of a week during each of the four seasons of the year.

TABLE II
AVERAGE AMOUNT OF SLEEP PER DAY AT VARIOUS AGE LEVELS¹
(The values represent averages for all seasons combined.)

Age	Hours	Minutes
1-6 months.....	15	3
6-12 months.....	14	9
12-18 months.....	13	23
1½-2 years.....	13	6
2-3 years.....	12	42
3-4 years.....	12	7
4-5 years.....	11	43
5-6 years.....	11	19
6-7 years.....	11	4
7-8 years.....	10	58

The records on which Table II is based showed large individual variations at all age levels. Below the age of one year, there was a difference of more than three hours between the ten per cent of children who slept most and the ten per cent who slept least. Up to the age of four years, the corresponding difference was more than two hours; and from four to eight years, the difference was more than an hour. The differences between individual children at the two extremes were considerably larger.

Table III, which is based upon results obtained by Terman and Hocking (24), shows the amount of time children spend in bed at various age levels from eight to eighteen years, as reported by the children themselves.

¹ From *The Sleep of Young Children* (Minneapolis: University of Minnesota, Institute of Child Welfare, 1930). Circular No. 4, 11 pp. Reproduced by permission. See also Foster, Goodenough, and Anderson (13).

TABLE III
AVERAGE AMOUNT OF TIME SPENT
IN BED FROM 8 TO 18 YEARS, AS
REPORTED BY CHILDREN
THEMSELVES¹

<i>Age in Years</i>	<i>Hours</i>	<i>Minutes</i>
8-9.....	10	42
9-10.....	10	13
10-11.....	9	56
11-12.....	10	00
12-13.....	9	36
13-14.....	9	31
14-15.....	9	06
15-16.....	8	54
16-17.....	8	30
17-18.....	8	46

There are many difficulties involved in obtaining measurements of time spent in sleep as a basis for practical recommendations. Even a careful observer will have difficulty in telling whether a child whose eyes are closed actually is asleep. Older persons who keep approximate records of their own sleep can record how much time they spend in bed, if they are careful to watch the clock, but such records do not, of course, tell how much of this time was spent in sleep. Estimates of amount of sleep seem to be especially inaccurate in the case of persons who suffer from insomnia or claim that they do. Such persons frequently underestimate the amount of sleep they actually obtain. When a person's sleep is fitful, he may even fail to realize that he has dozed off at intervals. Apart from this difficulty of determining the time actually spent in sleep, there is the difficulty of determining "natural" sleep requirements. To be sure, the healthy infant, if left free to sleep whenever he wants to, without arbitrary interruption, does not present a problem on this score, but the problem definitely arises as a child grows older. On the one hand, the amount of time an older child sleeps, or at least the amount of time he spends in bed, is governed to a large extent by conventions. It is possible that many children thus are prevailed upon to stay in bed longer than is

¹ From Terman, L. M., and Hocking, A.: "The Sleep of School Children," in *Journal of Educational Psychology*, (1913), 4:138-147, 199-208, 269-282. Reproduced by permission.

necessary, but it is no simple matter to let the runabout child control his sleep schedule according to his own "natural" demands, for many happenings in his environment may conspire to keep him awake when he normally would become drowsy (such as boisterous play and excitement) and to keep him from becoming *ausgeschlafen* when he is sleeping (such as the bustle of the household or the demands of the home and school schedule). The difficulty in this connection is exemplified by the fact that, as children grow older, they desire more and more to stay up late in the evening, and, at the same time, more and more of them have to be called in the morning.¹ The difficulties of "natural self-regulation" of sleep are even greater in the case of children whose equilibrium is disturbed by malnutrition, illness, digestive difficulties, or other bodily disorders; such disturbances may render a child wakeful when he is much in need of sleep. Lacking full information as to a given child's natural sleep needs, conscientious parents generally lean toward the view that the more sleep a child can conveniently get the better it is for him, and they govern his routines accordingly.²

Although difficulties such as those noted above complicate the problem of determining sleep needs, studies of children's sleep have produced findings that are quite suggestive, as far as they go. Reynolds and Mallay (19) studied the sleep of thirty-four children who, for several weeks during the summer, spent the twenty-four hours of the day in a nursery school. Note was made of when the children went to bed, when they fell asleep (as far as could be determined by close observation), and when they awakened. The respective number of hours spent in sleep by two-, three-, and four-year-old children was twelve-and-a-half hours, eleven hours and twenty-three minutes, and ten hours and fifty-seven minutes.

¹ Many a child who persistently routed his parents out of bed in the early morning when he was an infant makes a complete about-face by the time he reaches school age, so that now his parents must rout him out of bed. There are many youngsters, however, who continue for many years to wake up all too early and brightly in the morning. Some of these, however, are children whose parents invite martyrdom by insisting that the children go to bed too early.

² Sleep disturbances because of unpleasant dreams are discussed in Chapter XII.

These averages parallel but are somewhat lower than the averages found for the same ages on the basis of mothers' reports, during the summer season, in the study represented in Table II. The average child spent an hour in bed before falling asleep. It was found that children showed wide variations in amount of sleep from day to day; however, when results were plotted in terms of longer periods, such as a week or a month, it was found that there was a high degree of constancy in the amount of sleep taken. This phenomenon, it may be noted, corresponds to what has been found with regard to children's eating—a child may show wide short-term fluctuations in the times when he is hungry and in the amount of food intake, and yet show a high degree of stability when trends are measured in terms of weeks rather than hours or days.¹ Reynolds and Mallay likewise observed that, if for one reason or another a child lost a good deal of sleep during one day, he did not promptly counterbalance this by sleeping that much more the following day; rather, he made it up over the ensuing days.

Daytime Naps. The reduction in total amount of sleep during the twenty-four hours is brought about, even during the first weeks after birth, primarily by a decline in amount of time spent in sleep during the daytime hours. Just as the total sleep pattern varies with different children, so also are there individual differences in the manner in which daytime sleep is curtailed, but in all the general trend is toward curtailment. The reduction is linked with increases in the duration of uninterrupted nighttime sleep. In the case of many children, the previous early morning nap, following a feeding early in the morning, and the late evening nap are merged with nighttime sleep. Along with this trend, periods of wakefulness during the day lengthen and become more clearly demarcated from periods of sleep, leaving a late morning and an

¹ Full realization of the fact that such fluctuations occur in sleeping, eating, as well as in mobility, pep, energy, interest, competence (especially on a steeply rising curve of learning), and in practically all other functions, would undoubtedly spare many parents much concern which is often translated into practices that cumulatively constitute overprotection and needless interference.

afternoon nap. In the second year, the afternoon nap usually gains ascendancy, although individual children may vary from this trend. After the second year, inroads are likewise made on the afternoon nap, although here also there are large individual differences.

An afternoon sleep period usually becomes a part of the child's conventional routine after the age of two. Many children continue for some time to sleep through this period; others tend more and more to remain wakeful during part or all of it. As described by Sherman, "The child learns to stay in bed a certain amount of time" (22). In the study by Reynolds and Mallay, it was found that, in the case of many children, the daytime nap drops out on an all-or-none basis; instead of gradually tapering off, some children either continue to sleep during the nap period or at a certain point discontinue naptime sleep altogether. In Sherman's study, comparisons of daytime sleep habits and personality records of nursery-school children indicated that children who were "spontaneously active, interested, and socially well-adjusted" tended to spend less time in daytime sleep and to require more time for falling asleep than did children who showed little interest in their playmates and little spontaneity and activity on the playground.

The findings with regard to children's own daytime sleep behavior do not support a policy of fixed standards, similar for all children. The problem of management of sleep and rest periods remains a puzzling one during preschool years and on into adult life. It may be much to the child's advantage to prevail upon him, even if it be against his own active inclinations at the start, to acquire the habit of taking rest periods during the day, whether or not he falls asleep during those periods. One thing that is needed by older children, as well as adults, is the ability to relax completely during the course of the day's activities. Studies of fatigue and rest have shown that brief rest periods may have more recuperative value than the equivalent amount of time spent in one long rest period. The ability to relax, and even to doze off during free moments between strenuous activity, would be a boon alike

to large numbers of older children and adults. It does not appear that this happy faculty is fostered by a sleep regime which, from preschool years and onward, is governed more by conventions and the clock than by the child's own varying needs from day to day and even from hour to hour. One obvious difficulty is that practical necessities, both at home and at school, require a certain amount of regularity of schedule; the competition of other demands makes it difficult, first, to gauge a child's natural demands and, second, to adapt his schedule to such demands. In connection with this, it is likely that a fixed policy of demanding that the child sleep, or at least stay in bed, according to a fixed schedule, whether he feels inclined to rest or not, may dispose him to prize his periods of freedom all the more.

Some children resign themselves to a fixed schedule, others enter into a continual contest with their parents, show outright resistance, or use all manner of dodges and excuses to circumvent the bedtime routine. Where conflict exists, the child is less likely openly to betray his need for sleep or rest during off-schedule hours than would be the case if his sleep schedule were less arbitrary. Fortunately, however, if a reasonable schedule is applied, with provision for occasional departures from routine and with a policy of ruling out distractions and counterattractions at the bedtime hour, most healthy children can readily acquire the habit of conforming to regular hours.¹

ELIMINATION

Children and parents alike would be spared much trouble if infants were housebroken at birth. As it is, the development of bladder and bowel control is a relatively slow, oftentimes laborious,

¹An account of the practical considerations involved in the management of sleep would involve lengthy treatment of such topics as the relation of sleep habits to health, nutrition, exhaustion, excitement before bedtime, various forms of negative conditioning, bladder and bowel control, emotional insecurity, anger, fear, and physical factors such as temperature, crowding, noise, illumination, and so forth. For a discussion of these practical aspects of the subject, the reader is advised to consult books dealing with the general subject of child care and with the subject of sleep. Suggested references are given in the bibliography under numbers (1, 3, 12, and 14).

process, entailing much labor on the parent's part and frequently a good deal of emotional complication as far as the child is concerned. Control of elimination requires the ability to inhibit processes that are completely involuntary at the start and the control of muscle groups that are obscure and unseen. As in other aspects of the child's development, it is important to scale the child's training to his growth. At the start, the child lacks the nervous mechanism for voluntary control and would be unable to control his elimination even if, by some freak of nature, he developed a desire to do so.

Although the processes of elimination and the development of voluntary control of them have been the subject of some research study, systematic information as to what might be the "natural" course of development is relatively limited. Definitive information is difficult to obtain by reason of the many factors, other than neuromuscular maturation, which complicate the behavior involved.

Progress in the Control of Elimination. Many features of the child's progress in gaining voluntary control have been described by Gesell and Ilg (14). In discussing the problem of voluntary control, these investigators draw an interesting analogy between the eliminative processes and the development of voluntary control in the motor sphere. For example, when a child, in manipulating an object, releases it at will, it means that his grasp reflex has yielded to a mechanism of inhibition and control. The investigators point out that the power deliberately to release an object is acquired rather slowly; it is not until the end of the first year that a majority of infants "place a block into a cup or a pellet into a bottle with consistent intent, by a deliberate 'letting go' of hold" (page 125). They further point out that an equivalent control of the tonus of the bladder sphincter may in some respects be more difficult. Accordingly, a child's failure to respond well to training may be due to the immaturity of the sensorimotor mechanism, rather than to perversity and resistance. "Here is a

field where the demands of culture may be brought to bear too heavily on an immature nervous system" (page 125).

In their discussion of developmental aspects of bladder control, Gesell and Ilg point out that for some time after birth many infants will wake up and cry when wet, but the same infants, at about the age of three or four months, may tolerate wetness and fail to fuss or complain until about the age of a year. The mother can watch for the child's natural rhythms in voiding his bladder and note the times of day when he is most likely to respond to being placed on the toilet.

The rhythm and frequency varies with different children and may fluctuate considerably in the case of an individual child. During this immature stage, as later, the various devices and pressures that may be used in training the child, apart from calm and routine efforts to adjust to the child's own rhythms, may do more harm than good. For a considerable time, the infant's "bladder control" is largely a control exercised by the vigilant parent who anticipates voidance of the bladder before it occurs.

Gesell and Ilg indicate that a definite advance has been made by the time the infant awakes dry from his nap; this is "one of the truest indications of maturing ability to withhold micturition." (page 126). When this capacity is acquired, a child who previously resisted may comply when placed on the toilet. Some children reach this stage during the last quarter of the first year, but usually it is not reached until the thirteenth to the fifteenth month. Such ability to withhold, coupled with increased awareness of wetness and of puddles, is a decided aid to learning, although it usually takes several additional months before the child has matters under control with a fair degree of consistency. There follows a period during which he deliberately lets his needs be known, at first usually by means of grunts, gestures, and other signs, and shortly thereafter by means of words.

During the first part of the second year, while the mechanism for control of the bladder is being perfected, the child is also under-

going the process perfecting his postural control. Gesell and Ilg describe how complications may arise in coördinating the two. Placement on the toilet seat may produce tensions that result in the withholding of urine and then the child may promptly urinate when removed from the seat.

Lapses, Hindrances, and Later Progress. Even after the habit of letting needs be known has been fairly well established, there are likely to be many lapses, reversions to earlier forms of behavior or fluctuations in the consistency with which control is exercised. For a period, many children likewise may show a rather indelicate inclination to play with the puddles they have made. Occasionally the child who seems well on the way to complete control of the eliminative functions will backslide. When accidents occur, he may resort to furtiveness and falsehood, disclaim responsibility for the mess he has made, blaming it on others. Such digressions from the straight and narrow path are so common that they should probably be regarded as normal features of the child's advance. The child's performance is likely also to be affected variously by many other factors, such as teething, illness, temperature, consumption of liquids, unwise and precipitous methods of "training," and the like. In time, many children learn to exploit the processes of elimination as a means of gaining attention from adults.

In a study by the writer and an associate, a young nursery-school child, who much preferred the company of adults to that of children, quickly discovered that he could gain his ends by asking to go to the toilet. During one fifteen-minute period, he slyly managed to go to the toilet four times, once with each of the four teachers and assistants who were in charge of the group. Apparently as a device for gaining attention, a child will sometimes revert to earlier habits of lack of control when a new baby arrives in the family.

Definitive statements as to when the child may be expected to assume responsibility in these matters cannot be made because of individual differences in children and because of differences in the

circumstances in which their training occurs. With the proper care, the ability to withhold the contents of the bladder, to let needs be known, and to accomplish release when helped to the toilet during daytime hours may normally be expected by about the age of one-and-a-half to two years (3, 25); although, as noted above, there may be occasional lapses after such control seems to have been established and some children will lag considerably behind others. In an investigation by Scoe (21), it was found that most of the children who were studied had established control by the time they reached their second birthday. The "norms" for bladder control, as reported by different investigators, show some variation. Nighttime control frequently is not established until half a year or more after daytime control has been accomplished, but there are some children who acquire the ability to stay dry at night earlier than the ability to remain dry during the day (14).

After the child has established control, as defined above, much time may still have to elapse before he is capable of self-help in going to the toilet and in managing his clothes. This is especially true if the fixtures and his clothing are unsuited to his limited motor powers.

The foregoing statements deal mainly with bladder control. Control of the bowel usually is established more readily. In the healthy child, bowel movements are more regular and considerably less frequent; they can be anticipated more accurately and at an earlier age than can voidance of the bladder, thereby facilitating the learning process of associating a movement with being placed on the toilet. In this function, however, there are large individual differences, and the child's advance toward this type of control does not always follow an undeviating line.

Attitudes With Regard to Elimination. In due time, in our culture, whatever the nature of the training children may have received at home, the process and the organs of elimination become enveloped in an atmosphere of furtiveness, secrecy, shame, and frequently guilt. The factors that cause this, including associations between elimination and nakedness and sex, obviously are

many. The attitudes that are established usually extend far beyond the practical requirements of privacy and circumspection that would be justified simply on sanitary, aesthetic and moral grounds.

Changes with age in children's attitudes toward elimination and the genital organs are shown in an interesting fashion in a study by Dillon of two groups of nursery-school children (11). One group included twenty-two children aged twenty-seven to forty-eight months; the other included sixteen children aged forty-two to sixty-two months. The younger group had an average age of about thirty-five months, the older fifty-one months.

In the youngest group, there was relatively little self-consciousness or furtiveness with regard to elimination, nakedness, or the sex organs; but the older groups exhibited such manifestations considerably more often by way of attempts at concealment, secretiveness, use of "bad words," and so forth. Even in the younger group there were instances of self-consciousness, reflecting the influence of the home. It was observed, for example, in the case of one youngster who was timid about going to the toilet in the presence of others, that, when the mother accompanied the child to the toilet on one occasion, she showed none of the matter-of-fact attitude of the nursery-school teachers but took pains to spread her skirts to shield the child from view.

Only one child in the younger group showed self-consciousness with regard to the words used to denote elimination. Tabooed language was more manifest with the older children; for example, some of them would whisper "bad words" to each other or giggle and snicker as they repeated terms having to do with elimination. It was noted, incidentally, that children whose parents had taught them accurate terms for designating elimination and the genitals would adopt the baby terms used by other children and use them by preference. Although the teachers were more matter-of-fact than some of the parents, the difficulty adults encounter in being thoroughly matter-of-fact is exemplified by the fact that, during the periods of observation, the teachers were not heard to mention the genitals by name.

The children of the younger group hit upon a game of taking rectal temperature. When a teacher tried to discourage this make-believe game, the children went to secluded places and showed increased interest in it; but when it was suggested that they play the game openly, they readily complied, and after a few weeks without interferences, interest in it disappeared. This game, which was generally out of keeping with the nonchalance showed by the younger children toward elimination, illustrated the manner in which the excretory organs can take on a tabooed lure, even at an early age. The older group took over this game from the younger ones, but their attitude toward it appeared to be distinctly different from that exhibited by the younger ones; from the start, they were more furtive, and their interest in the game lasted longer.

Attitudes Toward Genital Organs. Note was also made of reactions to the genital organs, which are physically associated with the process of elimination. In the younger group, handling of the genital organs was less frequent than in the older group; it was shown by fewer children, took place more openly, and in most cases was more fleeting than in older group. Such play was observed in the case of seven of the twenty-two younger children and eight of the sixteen children in the older group. Children who gave more than passing attention to this play tended to show more tenseness and instability in other aspects of their behavior than did other children. The behavior did not seem to be stimulated materially by nakedness, the presence of both sexes, or elimination; rather, it appeared to be related to a state of emotional tension. At no time was a child observed to try to conceal such activity or to show guilt or shame. Several children were observed to show an interest in the genitalia, the anus, breasts, navel, and other organs, much as they might show an exploratory interest in other events that caught their attention; but a few children showed an interest in the opposite sex that did not seem to arise simply from curiosity as to physical appearance. The children in the group aged twenty-seven to forty-two months gave little evidence of a clear differentiation between the sexes, but children in the

older group all showed some consciousness of sex differences. Not all of the older children, however, had a clear recognition of physical differences; some would recognize differences in clothing and costumes, never fail to apply the words "boy" and "girl" correctly, and yet apparently regard the male sex organ as an incidental possession which girls did not have rather than as an essential distinguishing characteristic.

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CHAPTER IV

MOTOR DEVELOPMENT

GENERAL TRENDS IN MOTOR DEVELOPMENT

During the first two years, the child moves forward in all aspects of his motor development, yet it is possible to note some general characteristics of the child's progress and to segregate certain abilities for special examination.

Although children differ considerably in the rate of their progress, the general pattern of early motor growth tends to be ^{(New} similar for all. The order or sequence of the develop^{No. 24,} specific performances is not invariable, for individual children and reverse the order in which specific performances appear. Genetic performance varies far from the average trend. In passing, ¹⁹³⁰ be pointed out that the determination of the age at which the median child is likely to exhibit a given performance does not imply that this is acquired full-fledged on a certain hour or day and that it remains fixed thereafter. Rather, it emerges from and is a part of a larger context. Sometimes the child may show a given performance tentatively and then relapse to an earlier type of behavior. As McGraw points out, a new development might announce itself, so to speak, and appear momentarily quite a while before it recurs and is established as a regular feature of the child's behavior. For example, two infants in her study sat alone for a brief moment without support some weeks before the ability to sit alone definitely emerged (29).

TRENDS IN PHYSICAL GROWTH

The development of motor activities is closely interwoven with changes in gross bodily size, the size of various parts of the body,

and in bodily mechanics.¹ The average newborn child is about twenty and a half inches long. During the first year, his length increases by over a third, and by the age of five years, he will be about twice as tall as he was at birth. During the period of physical growth, there likewise are continuing changes in the proportions of the body. The young child's head, for example, is relatively large at birth and does not increase either as rapidly or as much in size as does the child's total stature. There is a considerably larger increase in the length of the trunk, an even greater increase in the length of the arms, and, by the time full stature is obtained, a still greater increase in the length of the legs. These trends are generally in keeping with the cephalo-caudal direction of development as noted earlier in the discussion of prenatal growth. Different parts of the body grow at different rates and reach their approximate maximum at different times during the period from early childhood to maturity.

The same is true also of the development of various internal organs of the body. Not only is there a differential course of growth for different parts of the body, but the differential growth pattern may show variations from individual to individual; for example, at the time of puberty, a boy who has "shot up" in height may, for a time, lag behind a boy of similar stature or behind a shorter boy of similar age in the development of the sex organs, pubic hair, and a beard.

LOCOMOTION

The child's first step comes as the climax of a long, preceding series of developments. The groundwork for the ability to walk alone is being laid long before the infant is able to stand by himself or to sit alone, or even to raise his chest from the crib on which he is lying. The first "steps" in locomotion, so to speak, are not taken with the legs but with the muscles in the upper trunk and arms.

¹ An adequate treatment of anatomical and physiological growth would constitute a volume in itself. For a more extended treatment of this subject, the reader is referred to references listed under the following numbers: 2, 3, 7, 8, 33, 34, 43, 41. Changes in bodily stature and in bodily proportions are illustrated by photographs and line drawings in a book by Meek (32).

A study by Shirley (40) traces the development of locomotion in twenty-five babies from birth to the age of two years. After birth, the child will continue for some time to assume the curled-up posture resembling that of the fetus, but this posture is outgrown by the age of about three or four weeks. At the age of three weeks, the median child in Shirley's study (the family background of these children was slightly above that of the average child) could lift his head and raise his chin clear of the table on which he was lying. At nine weeks, he could raise his chest clear of the table for a minute or more, while supporting his weight on his elbows and forearms. Such activities represent important advances in the ability to walk alone, even though they have no immediate connection with walking. At twenty-five weeks, the median child was able to draw up his knees ^{1.24}, out what resembled a "swimming" movement. At tw^{tion and} weeks, he could roll from his back to his stomach, and at ^{Genetic} weeks he could creep.

These developments represent only a few of the advances in the control of posture and of the bodily musculature preceding the ability to make any forward or backward progression. Naturally, children differed in the age at which they reached the various achievements. Moreover, even though there was a high degree of similarity between the different children in the sequence or order of the various developments, there were individual variations in earliest mode of progression. Some children were able to move while lying in a prone position even before creeping developed. Some could creep backward before they were able to make forward progression. A few could make progress by "hitching" while lying on their backs, and some exhibited a "suspension-bridge" form of locomotion (that is, with their weight sustained by the hands and toes, and the body raised in midair).

In the advance toward standing erect, without support, a majority of the children likewise went through a uniform sequence of performances. The ability to sit on an adult's lap with progressively less and less support was followed by ability to sit alone

momentarily on a hard surface. Eleven weeks after the median child had become capable of sitting alone for one minute, he was able to stand alone while holding to a piece of furniture; five weeks thereafter he was able to pull himself to a standing position by a piece of furniture. At the age of sixty-two weeks, or about fifteen months, the median child was able to stand alone without support; and at the age of sixty-four weeks he was able to walk alone.

Individual Differences. One child walked when led by the hands at the age of twenty-one weeks, and at the other extreme was a child who could not do this until the age of seventy-two weeks. The most precocious child walked alone at fifty weeks, and the most retarded at seventy-six weeks. The difference here, even though the children were all healthy and represented a somewhat select group, was six months between the most advanced and the most retarded child.

It did not appear that these differences in rate of locomotor development could be accounted for by differences in opportunity to practice or by differences in the amount of coaching or encouragement provided by the childrens' elders. Special coaching appeared to be effective only within the limits determined by the child's own developmental status at a given time.¹ Babies who were thin, muscular, and small-boned tended to walk earlier than did babies who were short, rotund, and heavy; but the relationship between anatomical characteristics and locomotor ability was not such that the former could be regarded as the cause of the latter. It was noted that babies who displayed the greatest disposition to exercise and to engage in gross motor play also were likely to be accelerated as compared with the less energetic children, but in connection with this relationship, Shirley points out that interest in activity seems to be as much dependent upon skill as skill is dependent upon interest. Shirley suggests that there may be inborn differences between children in their disposition toward motor ability.

¹ These observations, it will be noted, are in keeping with findings set forth in the preceding chapter.

The findings in Shirley's study indicate that children who are advanced or retarded in their locomotor progress, as compared with the average, at an early age are likely to maintain about the same pace in their development during the ensuing months. The

TABLE IV
THE MEDIAN AND QUANTILES FOR STAGES IN THE
DEVELOPMENT OF LOCOMOTION¹

Description of Stage	Number of Cases	Age in Weeks		
		Q ₁	Median	Q ₃
First-Order Skills:				
On stomach, chin up.....	22	2.0	3.0	7.0
On stomach, chest up.....	22	5.0	9.0	10.0
Held erect, stepping.....	19	11.0	13.0	15.0
On back, tense for lifting.....	19	14.0	15.0	18.0
Held erect, knees straight.....	18	13.0	15.0	19.0
Sit on lap, support at lower ribs and complete head control.....	22	15.0	18.5	19.5
Second-Order Skills:				
Sit alone momentarily.....	22	20.5	25.0	26.0
On stomach, knee push or swim....	22	22.0	25.0	27.0
On back, rolling.....	19	25.0	29.0	32.0
Held erect, stand firmly with help..	20	29.0	29.5	33.0
Sit alone one minute.....	20	27.0	31.0	34.0
Third-Order Skills:				
On stomach, some progress.....	17	32.5	37.0	41.0
On stomach, scoot backward.....	16	34.0	39.5	45.5
Fourth-Order Skills:				
Stand holding to furniture.....	22	41.0	42.0	45.0
Creep.....	22	41.0	44.5	45.0
Walk when led.....	21	37.5	45.0	45.5
Pull to stand by furniture.....	17	42.0	47.0	49.5
Fifth-Order Skills:				
Stand alone.....	21	56.0	62.0	66.0
Walk alone.....	21	59.0	64.0	67.0

child who was able to creep at an early age, as compared with other children, likewise walked at an early age, if nothing untoward happened.

¹ Each median value represents the age at which fifty per cent of the children achieved the performance in question; Q₁ represents the age at which the most accelerated one fourth of the group reached the performance and Q₃ the age at which seventy-five per cent of the children reached a given stage. Adapted from Shirley, M. M.: *The First Two Years: A Study of Twenty-Five Babies*, Vol. I. *Postural and Locomotor Development* (Minneapolis: University of Minnesota Press, 1931), p. 99. Reproduced by permission.

The child's first steps obviously do not mark the end of developments involved in the ability to walk, for with time there come changes in the length of the child's stride and the angle of his steps, as well as improvements in his equilibrium, in the regularity of his gait, and in speed and precision. Although the attainment of ability to walk alone represents an important milestone in the child's career, it really is only a part of a larger, continuing process of motor development. As soon as the child is able to walk, he launches upon other activities that incorporate elements of walking into larger patterns of activity, such as jumping, hopping, dodging, and dancing.

USE OF ARMS, HANDS, AND FINGERS

When a sober adult at dinner picks up and devours the kernel of a small peanut, no one at table with him is likely to remark or to wonder at the consummate act of skill which has just been performed. It is likely that the peanut eater himself is only half-aware of his performance, so sure is his aim, so expert is his use of thumb and forefinger in grasping the peanut, so smooth is his act of conveying it to his mouth. But back of this seemingly automatic act lies quite a story of development, beginning with the infant who is unskilled, not only in the finer movements, but also in the grosser coördinations between eye and hand.

Following are some of the steps in the development of reaching and grasping after the third month, as described by Halverson from a study of infants by means of motion pictures (15).

At sixteen weeks, the typical child, as represented by Halverson's subjects, will follow the hand of the experimenter as he places a small cube within reaching distance on the table at which the infant is seated. The infant slides his hand about on the table and keeps one or both hands on the table for a period; but, as a rule, he will not reach the cube. At twenty weeks, the child stretches out both hands simultaneously, scratches the table, and attempts to get both hands about the cube, and if he succeeds in touching the object, he is likely to push it out of reach or simply

to hold it. At twenty-four and at twenty-eight weeks, he approaches the cube with a scooping motion and surrounds or "corals" it. Even at this age he often uses both hands, and he may still clumsily push the object out of reach. If he succeeds in getting hold of the cube, he will carry it to his mouth, inspect it briefly, and perhaps release and procure it again.

With added age comes increased skill. At first, the child's reaching consists of crude shoulder and elbow movements, illustrating the proximo-distal direction of development noted in an earlier chapter. His aim is poor and his approach clumsy. In time, he becomes able to make selective movements with his wrist, to aim more accurately, and to rotate his hands. In his first attempts at grasping, he makes practically no use of his thumb, but closes in upon the object with a mass movement of the palm and fingers. This, in time, yields to a deft and well-aimed grasping with the thumb and the tip of the forefinger. Up to the age of twenty-four weeks, the infant's approach seems to consist of three distinct acts, including the raising of the hand, a circuitous and forward thrust of the hand, and then a lowering of the hand. Finally, at forty weeks, the act is coördinated into a single performance, with little remaining trace of separate acts. These observations illustrate only a few of the steps involved in the development of the seemingly simple act of reaching, grasping, and handling an object. A detailed analysis of this small item alone would fill a book.

The age at which children achieve the performances described above will vary, of course, with different individuals. Likewise, there may be some variation between the findings obtained by different investigators, working with different groups of children, as to the precise age at which a given performance is likely to be exhibited for the first time by the median child. However, such variations between results obtained by careful investigators are quite outweighed by substantial agreements as to the order in which various developments appear and the approximate age at which a given performance is exhibited by the average child.

The summary below gives the median age at which various performances with arms, wrists, and fingers were achieved by infants who were the subjects in a study by Bayley (5). The items that are listed have been selected from a larger list of motor items; some of which are reproduced elsewhere in this chapter. It will be noted, among other things, that Bayley distinguishes between "beginning," "partial," and "complete" thumb opposition; and that separate ages are given for prehension involving thumb opposition in the grasping of a cube, as distinguished from "partial" and "fine" prehension in picking up a small pellet.

TABLE V
ADVANCES IN PREHENSION¹

<i>Motor Performance</i>	<i>Age Placement in Months</i>
Retains red ring (retains a ring, designed for the test, when placed in his hand).....	.7
Arm thrusts in play (when lying in a dorsal position, makes vertical arm thrusts in random play).....	1.7
Hands predominantly open (hands predominantly open even though not grasping an object).....	3.6
Beginning thumb opposition (beginning evidence of use of thumb in opposed manner in grasping a cube).....	4.1
Partial thumb opposition (opposes thumb to fingers in a partial, but not complete manner, using the palm of the hand, as well as thumb and fingers in picking up the cube).....	5.1
Unilateral reaching (tends to reach and manipulate with one hand more often than bimanually).....	6.4
Rotates wrist (rotates wrist in manipulating toys).....	6.7
Complete thumb opposition (picks up the cube with thumb and fingers completely opposed, and without the use of the palm).....	7.6
Partial finger prehension (picks up a small pellet with several fingers opposed to thumb and not with a scooping into the palm with the fingers).....	7.8
Fine prehension with pellet (picks up a small pellet precisely with thumb and forefinger).....	9.3

LATER PROGRESS IN MOTOR SKILLS

The repertory of motor skills which a child acquires after the basic coördinations involved in locomotion and prehension have been established have not been studied in the same detail as have the earlier developments. For obvious reasons, it would be well-nigh impossible, even if investigators were mobilized for the pur-

¹ Adapted from Bayley, N.: *The Development of Motor Abilities During the First Three Years*, Monographs of the Society for Research in Child Development (1935), No. 1, 26 pp. Reproduced by permission.

pose, to follow the almost limitless variety of motor activity of the run-about child.

As already pointed out, after the child has reached the ability to walk alone, his motor progress and the specific skills which he acquires depend to a larger degree upon special environmental opportunities than was the case at an earlier time. This does not mean, however, that each child's progress becomes a law unto itself, with none of the uniformities that were observed during earlier stages. Children reared in similar environments exhibit, within broad limits, a good deal of uniformity in the manner in which they progress from one level of performance to the next or progressively add new skills to their repertory. Moreover, in some studies it has been observed that children whose opportunity to acquire a certain skill has been delayed will tend to pass through stages similar to those exhibited by children who had opportunities for practice at an earlier age. However, the older child, when he does get an opportunity, is likely to pass through the preliminary stages more rapidly.

Walking, Running, Jumping. Tables VI and VII present summaries that indicate children's progress in certain motor skills after the age of learning to walk. The first summary, which is adapted from Bayley's study, shows the rate of advance in certain aspects of locomotion. A number of motor performances are represented in Table VII, which is based upon studies by Wellman (45), McCaskill (27), and McCann (26).

Use of Wheel Toys. A detailed account of the development of children's uses of a number of wheel toys (doll carriage, wagon, dump truck, kiddie kar, and tricycle) is given by Jones, on the basis of a study of twenty-four children from the age of twenty-one to forty-eight months (23). The following account, adapted in abridged form from Jones' study, illustrates responses at successive age levels as shown by individual children who had access to the vehicles from an early age:¹

¹ Adapted from Jones, T. D.: *The Development of Certain Motor Skills and Play Activities in Young Children*, Child Development Monographs. (New York: Teachers College, Columbia University 1939), No. 26, 180 pp. Reproduced by permission.

At ten months, David crept to a small doll carriage which was in the room. He looked inside it, then held on to the side as he raised himself a little, and ran his finger along the rough surface. He started to creep away, but turned and gave the carriage a small push. His interest span was thirty-five seconds.

At twelve months, Barbara, who could walk only a few steps alone, saw her older brother, aged thirty months, climb into a large doll carriage.

TABLE VI
ADVANCES IN LOCOMOTION¹

<i>Motor Performance</i>	<i>Age Placement in Months</i>
Walks sideways.....	16.5
Walks backward.....	16.9
Stands on one foot with help.....	19.9
Walks upstairs with help.....	20.3
Walks downstairs with help.....	20.5
Walks upstairs alone, marks time.....	24.3
Walks downstairs alone, marks time.....	24.5
Jumps off floor; both feet.....	28.0
Stands on left foot alone.....	29.2
Stands on right foot alone.....	29.3
Walks on tiptoe.....	30.1
Stands on walking board with both feet.....	31.0
Walks on line; general direction.....	31.3
Jumps from chair.....	32.1
Walks upstairs, alternating forward foot.....	35.5
Walks tiptoe three meters.....	36.2
Jumps from height of 30 cm.....	37.1
Distance jump—36 to 60 cm.....	39.7
Jump over rope less than 20 cm. high.....	41.5
Distance jump—60 to 85 cm.....	48.4
Hops on right foot less than 2 meters.....	49.3
Walks downstairs—alternating forward foot.....	50.0

She rose to her feet and pushed the carriage with her brother in it across the floor. At other times she was unable to push it because it slipped away from her. (This item illustrates the fact that small children will often, at first, try to make use of a carriage as a support in walking; a relatively heavy, sturdy carriage, which has a low center of gravity and which does not move at a light touch, is more congenial to the child's purposes at this age than is a flimsy or easily pushed vehicle.)

At later ages, as would be expected, the children became more adept at using the doll carriage for pulling, and pushing, on the level floor or up an incline or under an arch. At twenty-one months, fifteen per cent of the children used the carriage as a conveyance for other materials; at thirty-six months, fifty-five per

¹ Adapted from Bayley (5). Reproduced by permission.

cent of them did this. In time, the doll carriage provided less interesting usage than did certain other wheel toys, except as a conveyance.

TABLE VII
MEASUREMENTS OF SELECTED MOTOR ACHIEVEMENTS
DURING PRESCHOOL YEARS¹

<i>Activity</i>	<i>Motor Age in Months</i>		
	<i>Both feet</i>		<i>One foot</i>
Hopping:			
1 to 3 steps.....	38		43
4 to 6 steps.....	40		46
7 to 9 steps.....	41		55
10 or more steps.....	42		60
Skipping:			
Shuffle.....			38
Skip on one foot.....			43
Alternate feet.....			60
	<i>Straight</i>	<i>Circular</i>	
	(10 feet)	(4½ feet diameter)	
Walking on One-Inch Path; No steps off..	37	45	
	3-step stair	11-step stair	
Ascending Steps:			
Mark time, without support.....	27		29
Alternate feet, with support.....	29		31
Alternate feet, without support.....	31		41
	3-step stair	11-step stair	
Descending Steps:			
Mark time without support.....	28		34
Alternate feet, with support.....	48		48
Alternate feet, without support.....	49		55
	12 inches	18 inches	28 inches
Jumping:			
With help.....		27	36
Alone, with one foot ahead.....	27	31	43
Alone, feet together.....	34	37	46

The following statements offer some descriptive accounts of the uses made of the wagon by the same child at successive age levels; the records are much abridged:

¹ Adapted from Wellman, B. L.: "Motor Achievements of Preschool Children," *Childhood Education* (1937), 13: 311-316. Reproduced by permission. "Motor age" represents the age at which fifty per cent of the children showed the accomplishment that is indicated.

Twenty-one months: Starts to climb in; walks away; returns and looks at wagon; pushes it forward from behind; leaves; examines other material in the room; manipulates a light fixture on the wagon; pushes wagon back and forth; plays with other material in the room, *etc.* (During ten minutes, he has gone to the wagon and left it again three times.)

Twenty-four months: Gets into wagon with right knee in and left foot on floor; leans over and examines light; sits and shakes handle (note that there is no propelling, although he is in a position to propel); touches trademark on side; he examines wheels, touches various parts, *etc.*; gets out, examines parts; pulls wagon to the incline and makes one attempt to pull it up, lays the handle down and says: "I want to go home and see Charlie" (this after five minutes spent entirely in or with wagon); observer suggests that he use the wagon; he makes a few passes at wagon, pulls it briefly, then wanders about.

Thirty months: Gets into wagon with right knee, with left foot on floor, and propels the wagon, first forward and then backward; gets out and asks for doll carriage (apparently desires to combine other materials with wagon, for when asked to continue to use wagon, he gets a small wagon and puts it into the larger one); pushes and pulls; sits astride and tries to propel with both feet, but cannot reach the floor, then propels with one leg as before; continues pushing, pulling, *etc.*

Thirty-six months: Propelling with one foot now established; a new performance is to pull wagon empty to the top of an incline and coast down; the child also hauls dirt with the wagon.

Forty-eight months: Pulling, pushing, propelling, coasting, and use of wagon to haul things continues, with two notable additions: (1) uses in make-believe game ("I'm playing moving van"); and (2) stands up in wagon, steering it by means of the handle, as his sister pushes him on request, saying "Look, everybody, I'm standin' up riding," and later telling another boy: "Did you ever stand . . . ? It's lots of fun. . . . Can you hold your balance?"

Some of the general trends observed by Jones in the use of wheel toys may be summarized as follows:

Unskilled repetition of activities, manipulative in nature, was characteristic of the children from approximately twenty-one to twenty-four months. From twenty-four to twenty-six months, abilities involving muscular control increased, followed by the practice of skills from twenty-six to thirty-six months. Merging of activities that previously took place as separate performances seemed to begin as soon as each activity had reached a stage at which the child's entire attention was not required in its per-

formance. Little integration of this sort, except of a simple variety—such as the manipulation of parts of the vehicles during their locomotion—took place until the thirty-sixth month. At forty-eight months, the behavior of the median child was usually influenced by a predominating idea which he was attempting to put into practice. As a result, the performance of a certain skill was usually secondary to the project as a whole.

Increase in Speed and Strength. As the child advances in age, his motor progress does not consist simply in an increase in expertness and versatility of his skills; there is a change also in the underlying strength and speed of his movements. An indication of increases with age in speed of motor response appears in Table VIII. This table shows median scores obtained by individuals at various age levels in a test of the speed with which the individual can execute a voluntary motor response on hearing a sound.

TABLE VIII
MEDIAN REACTION TIME BY AGE AND
SEX IN SIGMA UNITS (.001 SECOND),
AS MEASURED BY THE MILES
REACTION-TIME BOARD¹

<i>Age in Years</i>	<i>Boys</i>	<i>Girls</i>
3½.....	492	518
4½.....	356	424
5½.....	311	356
6½.....	259	286
7½.....	260	250
8½.....	223	249
9½.....	218	202
10½.....	229 ^a	229 ^a
11½.....	192 ^a	192 ^a
College students.....	171	172

^a Scores for boys and girls combined.

Further indications of changes in speed, accuracy, and power in certain athletic performances is shown in Table IX. This table is based upon findings obtained by Jenkins (18) in measurements of fifty boys and fifty girls at each age level from five to seven years. The original study should be consulted for information

¹ Adapted from Goodenough, F. L.: "The Development of the Reactive Process from Early Childhood to Maturity," *Journal of Experimental Psychology* (1935), 18:431-450. Reproduced by permission.

concerning the children who were tested and concerning the spread of scores at each age level. A study by Baldwin (2) of strength of grip as measured by a dynamometer which a child squeezes in his hand, portrays increases that come from seven years onward. Seventeen-year-old boys had more than three times as strong a grip as seven-year-olds, and in girls the strength of grip more than doubled during this period. Differences between the sexes in strength of grip was evident at all ages.

TABLE IX

AVERAGE SCORES OBTAINED BY FIVE-, SIX-, AND SEVEN-YEAR-OLD CHILDREN IN VARIOUS MOTOR PERFORMANCES¹

Activity and Measure Used in Scoring	Age Groups					
	5 Years		6 Years		7 Years	
	Boys	Girls	Boys	Girls	Boys	Girls
35-yard dash—timed in seconds.	9.30	9.70	8.52	8.84	7.92	8.02
Hop 50 feet without error—timed in seconds	10.82	10.33	9.20	8.89	8.81	7.59
Baseball throw at target—10-foot distance						
—error in inches.	8.87	16.90	5.40	13.17	4.20	8.50
Baseball throw—distance in feet.	23.60	14.50	32.80	17.80	41.40	24.40
Soccer kick—distance in feet.	11.50	8.00	18.40	10.10	25.40	15.00
Standing broad jump—distance in inches. .	33.70	31.60	39.30	38.00	42.20	41.00
Running broad jump—distance in inches. .	34.40	28.60	45.20	40.00	58.80	50.80
Jump and reach—vertical distance in inches.	2.52	2.22	4.02	3.48	4.98	4.28

Integration of Skills Into Complex Activities. As motor skills become established, they tend more and more to be incorporated into larger projects and enterprises. In her study of the development of children's uses of wheel toys, Jones found that children would concentrate all their attention on the motor performance as a project sufficient in itself while they were still in the process of mastering the performance (23); but, once the children had mastered the basic operations (such as riding the tricycle, propelling the kiddie kar with good control of direction), they tended to spend less time on the activity as an occupation in itself and

¹ Adapted from Jenkins, L. M.: *A Comparative Study of Motor Achievements of Children at Five, Six, and Seven Years of Age*, Contributions to Education, (New York: Teachers College, Columbia University, 1930), No. 414, 54 pp.

merged it with a more extensive enterprise, such as a make-believe game of transportation.

The mere fact that a child has achieved substantial mastery of a skill does not mean, however, that the performance no longer has any appeal in its own right; for the child may go on to perfect and enlarge his skill, to add hazards and "embroideries" to his performance, as when he takes his tricycle over the bumps or rides it along ledges or down steep grades, or goes down the slide backwards, or endeavors to make a one-hand or running catch after he has become quite adept at catching a ball with both hands while standing still. There are many skills that can be used satisfactorily even by a small child but which still afford almost limitless opportunity for further refinement and improvement. As examples may be mentioned such activities as roller skating, swimming, bicycling, and ball play of various sorts. However, a child will often spend time in devising new stunts and hazards in his use of a given skill, not because he is exclusively interested in this activity but for lack of opportunity to try his hand at something else. In a study of nursery-school and kindergarten children, Gutteridge (14) found that, by the age of three or four years, many children have mastered a number of the elementary activities afforded by the conventional equipment in a nursery school or kindergarten, and they must perforce continue to repeat the old performances or try to make elaborations upon old skills, for lack of anything else to do.¹

Motor and Artistic Activities. One area, among many others, in which mental operations play an important role in conjunction with motor performance is in the field of the arts. Such activities as drawing and constructing models or designs with clay or blocks, aesthetic dancing and the playing of musical instruments, require the ability to conceive and to plan, as well as manual skill. An

¹ The subject of motor activities is touched upon again in Chapters VI and XIV. Some considerations in adjusting educational opportunities to children's motor development, including a brief discussion of sex differences, are presented by the writer in another connection (19).

interesting account of children's progress in block building is offered by Johnson and her associates (20). According to this account, the child at first simply handles and carries the blocks, and piles them into irregular masses. This is followed by the beginning stages of construction, between two and three years, including simple designs such as are achieved by placing the blocks in a row, one on top of the other, to form a tower, and experimentation with a plan, such as spacing alternating sizes, or attempts to make a structure, such as a bridge or an enclosure. These activities are followed by further development of attempts to devise patterns and by improvement of technique in handling the blocks. By the ages of four and five years, the children are described as using the blocks for dramatic representation; and at five or six years, attempts are made to reproduce actual structures. Individual children, of course, vary considerably with respect to the sequence and the age at which they undertake various activities. It was noted, however, that children who had had no previous experience with blocks at the age of four or five years tended to repeat the stages exhibited by children who began their block play at the age of two, but the older children passed through the various stages at a more rapid rate.

Table X, based upon results obtained by Slater (42) in observations of nursery-school children's spontaneous uses of blocks for building purposes, shows the frequency of various structures at different age levels. The children's handiwork was graded according to a four-point scale, as indicated in the summary.

In children's attempts to draw, likewise, a general pattern of progress has been noted. According to observations made by Biber (6), the child passes through a stage of exploration, followed first by acquisition of some manual control, then by efforts to make designs, and finally by the beginnings of representative drawing at about the age of three-and-a-half and four years. In their first attempts to draw, many children make vertical lines before they are able to make horizontal lines; they also find it easier to imitate a

drawing made by another as they watch than to imitate a finished copy.

TABLE X
BLOCK-BUILDING ACTIVITIES¹

<i>Levels of Performance in Block-Building</i>	<i>Number of Children Showing the Various Levels of Performance</i>						<i>Total</i>
	<i>2 years</i>	<i>2½ years</i>	<i>3 years</i>	<i>3½ years</i>	<i>4 years</i>	<i>4½ years</i>	
Crude, unsteady towers (which toppled over on their own accord or were "joyously demolished by their maker").....	3	9	4				16
Towers, carefully done (prim- itive, but blocks fitted so they would stand with some apparent joy in workman- ship).....	1	5	7	9	3		25
Some imaginative elaboration (a definite plan, such as a train or house, somewhat recognizable).....		1	6	1	4	2	14
Careful, symmetrical construc- tion (houses with windows, trains on tracks, etc.).....		2	2	1	2	2	9

INTERRELATIONS IN MOTOR DEVELOPMENT

From early childhood into adult years, motor achievement represents an interrelation of many factors. Among the more obvious factors are strength and speed, size, and anatomical build. Among the more elusive factors that influence motor performance are such factors as interest, self-confidence, the tendency to be intrepid or fearful, willingness to take a chance, self-consciousness and its opposite, and so forth. The interplay of what might be called "personality" factors, as distinguished from "motor" abilities, has not been probed systematically, although it represents an important subject, not only from the point of view of understanding motor development, but even more from the point of view of the individual's personal and social adjustment.

¹ Adapted from Slater, E.: "II. Types, Levels, and Irregularities of Response to a Nursery School Situation of Forty Children Observed With Special Reference to the Home Environment. Studies from The Center for Research in Child Health and Development, School of Public Health, Harvard University, Monographs of the Society for Research in Child Development (1939), Vol. IV, 2, 148 pp. Reproduced by permission.

In everyday observation, one can note large differences between persons in their readiness to plunge into motor activities. We may observe two youngsters, seemingly similar in physical equipment, one of whom leaps into the pool, while the other dabbles on the brink; one climbs to a high perch in a tree, while the other stops at the lowest branch; one pits his strength against weights and boxes, while the other stands helplessly by. Illustrations of this sort could be multiplied at all levels from early childhood to old age. It is quite possible that there are inborn differences in the knack or flair for physical activity, but often when differences such as these appear they are the end product of past experience rather than attributable to hereditary differences alone.

Factors that may inhibit a person's disposition to plunge into motor activities are obviously many. A previous tumble or an especially harrowing or humiliating experience may have a restraining effect. Overprotection from parents and others, and constant reminders against danger and overexertion, may likewise have an inhibiting influence. Highly important are the many factors that influence a child's own habitual use and attitude toward his physical powers. Although all normal children are born with a disposition to exercise their limbs and to use their bodies, this inner urge alone may not suffice to carry the child over all the hurdles which he meets after his basic coördinations are established. During preschool and later years, motor interests thrive on successful accomplishment; motor interests that lead the child to new ventures and further improvement of ability are reinforced and augmented by success in earlier ventures. Proper facilities and opportunities, with judicious instruction where warranted, may therefore not only help to give the child more skill and mastery over his physical environment at a given time but may also provide the impetus for further ventures on his part.

Apart from a child's own initial interest in using his body and his limbs, an important factor is the social influence of other children. The example and incentive provided by other children may lead the child into endeavors that he would not undertake if left to

himself or exclusively in the company of older persons. Under some circumstances, however, a child may be barred from the benefits of this influence if, for one reason or another, he lags far behind his peers and is unable to follow them and share their activities. Again—and this is more likely to occur at the elementary-school age and later, rather than during early childhood—his sensitivity concerning his lack of competence may serve as a hindrance rather than as a stimulus to his own efforts; for, rather than risk embarrassment through lack of proficiency, he may withdraw entirely from the games of his fellows. Sometimes a vicious circle may be started in the following manner. Through lack of potential ability or opportunity, or through parental overprotection or other factors, a child falls behind his group; by virtue of this, he becomes reluctant to join in group games; the more he stays away, the greater becomes the difference between his skill and that of the other children, for they continue to practice and to learn.

As against such an eventuality there is, however, the fact that a child may be quite unskillful at one performance and still do well in others. In studies that have been made to date, it appears that there is relatively little correlation between ability in various specific motor performance (10, 13, 22, 45). Low correlations,¹ usually ranging below .30, have been found between scores in separate activities, such as throwing, climbing, and jumping. While correlations between various tests of strength tend to be considerably higher (ranging from .40 to above .80), there may be relatively little relationship between strength and speed. In commenting on this fact, Wellman, in a study cited above, states that, by virtue of this lack of interrelation, one should be hesitant in speaking about "the motor ability" of the child. Rather, on the basis of present information, it is safer to talk about "motor abilities" as a series of skills that are not closely related. Further study would be necessary to determine the extent to which this lack of

¹ For a brief account of what is meant by a correlation coefficient and an illustrative computation, see page 477.

interrelation is due to chance factors in the environment and to determine to what extent general factors of ability might be found.

One factor that also needs further study in this connection is the problem as to the extent to which competence in one skill may help a child to undertake another with more confidence, even though, for the time being, he may stand high in one and be quite low in the other. In McGraw's study, cited earlier (29), it was observed that the twin who received special training seemed to show more courage than did his brother in venturing into new activities.

Relation of Physical and Mental Ability. The general finding has also been that there is a low positive correlation between the mental and physical status of children. In a study dealing with the relationship between mental growth and physical growth, Abernethy (1) investigated a large number of children and college men and women. The physical data included measures of standing and sitting height, weight, carpal development, chest girth, lung capacity, and records of pubescence. The data with regard to mental development were obtained from systematic mental tests. Abernethy found, as have other investigators, that there was a positive correlation between mental and physical status, but that this correlation was relatively low. The highest correlation was between intelligence and standing height for boys. The coefficients between mental and physical measurements tended to decrease after the age of fourteen or fifteen years. Changes in rate of mental and physical development were unrelated. At the adult level, the correlations between mental and physical measurements were practically negligible. An incidental finding indicated that the age of onset of puberty has no relation to the mental test ratings of young women.

In her study of young children, Bayley (4), found that, during the first fifteen months, there was a relatively high degree of relationship (a correlation of .50) between "motor" and "mental" abilities, as far as these could be differentiated and separately measured. Success in one sphere seemed to be associated with

success in the other. After the age of fifteen months, however, the correlations were still positive but low. Shirley found a correlation of .28 between precocity in walking and intelligence (as measured at eighteen months). In studies of older children and adults, relatively low relationships have been found between intellectual ability and motor ability or physique (10, 28, 38). In cases of extreme mental deficiency, however, children may likewise be below normal in their physical and motor development. Mead (31) found, for example, that a group of feeble-minded children lagged about eight months behind normal children in age at which they began to walk.

HANDEDNESS

Among the theories set forth to account for handedness are the following: handedness is inherited; it is due to anatomical differences between the two sides of the body; it is due to the fact that one hemisphere of the brain is dominant; it is due to dominance of one eye over the other; it arises through chance; it is due to deliberate training imposed by others who have grown up in a traditionally right-handed world.¹

Although a majority of children eventually become predominantly right-handed, it is not usually until several months after birth that a definite hand preference is established. Even then hand preference may be less clear-cut than appears at first glance. A person may use the right hand in writing, throwing, and eating with knife and fork; and yet, on closer examination, it may be found that he uses his left hand for some performances and that there may be many additional acts which he can perform equally well with both hands. Again, a person may do better with one hand when fine movements are involved and do about equally well with both hands in a grosser form of the same movements, as when a person definitely writes better with his right hand on paper but does almost as well with his left as with his right in writing on

¹For accounts of the development of hand preference, in addition to the studies mentioned below, see references (3, 9, 16, 21, 24, 30, 36, 37, 39, and 44).

the blackboard. However this may be, most persons do exhibit so distinct a preference for one hand or the other in the ordinary acts of everyday life that, for practical purposes, we may call them right- or left-handed. The degree to which the right hand is preferred in certain acts of common use is indicated in a study by Hicks (17), who found that ninety-six per cent of a group of sixty children aged two to six years used the right hand in throwing a ball at a moving target, and by Jenkins (18), who found that from eighty-five to ninety per cent of three hundred children aged five to seven years used their right hands exclusively in tossing a bean bag, throwing a baseball, and in reaching while jumping.

Early Manifestations. The age at which hand preference appears has variously been set at from four to seven months by different investigators. Children have sometimes been observed to show a slight preference for the left hand during early months and then to shift to the right. Children who were observed in one investigation (Lippman, 25) used right and left hands about equally often when accepting an object at four and a half months, but thereafter use of the right hand increased. At twelve months, about seventy per cent accepted objects with the right hand. Even when it seems that the baby definitely shows a preference for the right hand, he may continue to show a good deal of ambidexterity for several months to come.

In a study by Giesecke (11), seven infants were observed from the time they were two weeks old until they were from four to eight months old, and supplementary observations were made of other children, with a view to probing the development of hand preference. Records were made of the infants' spontaneous use of their hands, and test situations were provided to precipitate hand movements. The records show a differentiation of the use of the hands during the period from two weeks to eight months. Interestingly enough, in four cases this differentiation favored the right hand and in three cases the left. Even though the total trend was toward preference for one hand over the other, this trend did not proceed regularly from the age of two weeks to the age of six

months; rather, there were shifts and transfers in preference during this period.

Giesecke made the interesting observation that hand preference does not appear as an isolated event but is accompanied by lateral dominance of the same side of the body; she points out that "there is evidence that lateral dominance concerns the body as a whole rather than merely the hands. . . ." In other words, handedness may be an aspect of "sidedness." Likewise, the head is more often turned toward the side of the preferred hand, and the eyes tend to turn toward the hand that is used; this suggests that eye dominance may be influenced by hand dominance (rather than the reverse), or, what is perhaps just as likely, that both the eye dominance and hand dominance may be aspects of general lateral dominance.

One of the prominent uses of the nondominant hand was for support while the other hand was active. If no support was needed, the nonpreferred hand did not remain entirely motionless, but it was not actively used like the other. It can be seen from this that, even though it might be a physiological factor that initially disposes the child to use one side more than the other, his "sidedness" will be further confirmed by habit as one hand repeatedly receives more practice than the other.

The number of left-dominant children found in Giesecke's study (six in a total of seventeen in the study as a whole) was relatively larger than one would expect from the proportions found among older children and adults. This suggests that there would be a relatively larger percentage of southpaws in the population at large than now are found if the tradition of right-handedness were not so firmly established. The evidence in the study was not conclusive as to hereditary factors in handedness.

Practical Considerations. The matter of handedness often causes concern to parents and teachers who diligently seek to foster righthandedness and to forestall a child's leanings toward left-handedness, as well as to child guidance workers who observe that a forced change to right-handedness sometimes seems to have pro-

duced stuttering or other nervous mannerisms. Both of these concerns deserve some attention.

That children who have been compelled to change from the left to the right hand may show a tendency to stutter, at least for some time, has been observed in some cases, but the cause-and-effect relationship here is not entirely clear: it is difficult, for example, to determine whether the stuttering is directly due to the change in handedness or whether it is due primarily to the methods that are used and the atmosphere that prevails when the child is being badgered into using his right hand. The stuttering, in other words, may be a symptom of the tension and confusion produced by the pressures that are brought to bear in order to produce the change in handedness, rather than a direct result of the change itself. Furthermore, while stuttering may sometimes appear, it by no means occurs in all cases in which a child is prevailed upon to change to the right hand; in addition, stuttering often appears in cases in which there is no clear evidence of any difficulties with regard to hand preference. Be that as it may, the important fact still remains that a change in hand preference as the result of pressure from others may, in individual cases, have rather unwholesome consequences. The risk of such consequences is certainly not worth while, and even if there are no unwholesome effects, it cannot be said that the change from left- to right-handedness is worth the trouble.

Considerably more frequent than the efforts to change an established preference for the left hand are the efforts parents exert while hand preference is still in its formative stages. In a great many cases, youngsters seem spontaneously to develop a preference for the right hand, without parental intervention; but with many children, parents take a good deal of pains to cultivate the right hand—as when they always make it a point to favor the child's right side in placing toys and tools within his reach; always place the spoon, cup, or pencil in his right hand; and gently transfer operations to the right hand if the child seems in a random

way to have started with the left. There are numerous little steps that parents may take to encourage the use of the right hand, and in most cases the child turns out to be the fine little right-hander that his parents intended him to be, with no ill-effect.

As long as no apparent harm is done, there certainly can be no objection to such maneuvers, but the question can be raised as to whether, from the child's point of view, all this fuss is worth while. A left-handed person may be handicapped in some ways but not many (unless he is hounded by persons who look upon handedness as a matter of principle rather than as a practical issue). As far as the writer knows, no systematic study has been made of the inconveniences involved in being left-handed. That there are some inconveniences is obvious. A left-hander usually has some trouble, for example, in learning to write gracefully from left to right across a page, especially with ink, which smears; and some left-handers find it difficult to learn shorthand. Many tools and utensils are made for right-handers—such as certain types of fishing reels, kettles with lips on one side only. A left-hander usually is handicapped when he tries to borrow a baseball glove or a golf club (but then he profits at the lending end). Because of the lay of the land in a right-handed world, he is lured into some habits which are inconvenient, as when he habitually lifts the telephone receiver with his left hand and then is called upon to write a message. Many other examples might be given. Whatever the various inconveniences may be, it is possible in many cases that they are offset by the greater degree of ambidexterity which some left-handers are compelled to acquire. There is room for more systematic study in this area, but certainly it could be argued that the importance of handedness is often quite overestimated, and, what with all the other restraints which adults must impose upon young children, they could at least let the child be free to lead with his left hand or his right, as he squares off for the battle of life.

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CHAPTER V

LANGUAGE DEVELOPMENT

In the early stages of language development, one can detect many parallels to the general order of events that appear in early motor development. Much of the vocal raw material is present at birth in the form of cries. These cries, at the start, are associated with the physiological condition of the organism and usually occur in conjunction with bodily movements. They are most likely to occur when the child is ready for another feeding, or is wet, or is suffering from discomforts of one sort or another. As time passes, the vocalizations become increasingly differentiated. As the child grows older, the activity of vocalizing becomes relatively more independent of other movements; also, the sounds themselves become differentiated, as illustrated by the obvious fact that, in time, the child uses a large repertory of different sounds for different meanings.

During the first days of life, a good deal of difference can be observed in the quality of the cries of one infant as compared with another; and the cries of the same infant also vary from time to time in quality, pitch, and loudness. Even so, however, it is questionable, on the basis of present evidence, as to whether the infant's cries differ characteristically in different situations, so that one cry is characteristic of hunger, while other, somewhat different cries are characteristic of pain, or anger, or fright (39).

EARLY VOCALIZATIONS

During the first days of life, the child's vocalizations function as distress signals and draw attention to his helplessness. His vocalizations are not entirely limited to crying, however. In a study of twenty-five babies from the time of birth, Shirley noted

some vocalization other than crying in practically all of the babies during the hospital period. The earliest vocal sound, other than crying, was usually described by listeners as a "grunt." The median age for the development of the grunt was six days. The "inspiratory crow" also was heard in a few babies during the first two weeks of life. Among the most "grown-up" sounds uttered by the babies during the first days of life were the "vocal yawn and the vocal sigh, which had all the world-weary inflection given them by adults."

To record and to classify the sounds uttered by a child during the first two weeks of life, and especially during ensuing weeks, would be next to impossible, for many of them do not conform to any phonetic system or to the formal vowel and consonant combinations of any single known language (49). Certain trends can, however, be noted. Several investigators have noted a predominance of vowel sounds, usually variations of *a* and *u*, in the earliest utterances (5, 6, 40, 47). Vowel sounds were prominent in the "grunts" recorded in Shirley's study.

By the end of three months, all of the children in Shirley's study made sounds that resembled syllables, which unlike the grunts, contained consonant elements. Such syllables frequently sounded like a consonant followed by a vowel and sometimes also contained a consonant sound at the end. The earliest sounds of this sort resembled what usually is called cooing. Single syllables were first noted in forms which to the adult ear sounded like *boo*, *goo*, *hauh*, *aah*, *woo*, *hm*, *xgsoo*, *aak*, *zee*, and *voh*. Sounds of this character appeared at a median age of eight weeks in the particular group of children studied by Shirley. "A few weeks later, a second syllable was added, often by tacking on a grunt or a vowel *a* or *u*," resulting in what to adult ears sounded like *ungoo*, *heuhe*, *umwah*, *hu-hu-hui*, *agoo*, *elow*, and *umaah*. During this period the observers frequently noted *kgs* sounds which were recorded as "gurgles," and *ch* and *sp* sounds, accompanying spitting and blowing, which were recorded as "sputters." In the course of the child's babbling, observers have also noted sounds resembling Ger-

man umlauts and gutturals, and utterances resembling the pronunciation of certain French vowels (5, 11).

Consonant sounds were at first noted mainly in combinations with vowels, but at a later time, Shirley observed that children would sometimes single out given consonant sounds—such as *x*, *ch*, *f*, and *s*—and “practice” them.

Combinations of Syllable Sounds. A further development was noted when the children repeated the same syllable several times in succession, yielding sounds such as *uggle-uggle*, *hey-hey*, *bup-bup-bup*, or slight variations such as *oddle-doddle*, *aduh-ajuh*. The subjects in the study under review exhibited vocalizations of this sort from five months and on.

It was noted, at this stage, that a child would frequently limit himself to a few such double-syllable sounds. A child’s vocalizations during an entire examination period might be restricted to only one or two characteristic sound combinations; some children used the same syllables over and over again for as long as three or four successive weeks.

A further advance was noted when the children combined two or more dissimilar syllables, yielding speechlike phrases such as *hey-yuh* and *hahdoo*, and jibberish such as *bahzhay*, *bobumho*, *puey*, and *dahruh*. Babbling of this sort was noted by Shirley at ten to eleven months. A short time later, the babbling took on a sentencelike form, in which several incomprehensible syllables were uttered with “assertive, interrogative, and exclamatory inflections. ‘Awee juh bejee?’ inquired Don at sixty-two weeks, and ‘Bee dus dee nine!’ declared Larry at seventy-six weeks. Such conversational jargon was carried over into and mixed with early comprehensible speech.”//

Early Forms of Communication. The two examples just cited illustrate the fact that a child’s utterances may serve as a means of social communication long before he has acquired the ability to articulate precise words or phrases. Shirley’s babies babbled to examiners at a median age of twenty-five weeks, and many of the

mothers of the children reported babbling as a social reaction at a considerably earlier age. Inflections and intonations resembling those found in adult speech were noted in fifty per cent of Shirley's subjects at thirty-seven and a half weeks, but the "first word" in the presence of examiners did not appear until a median age of sixty weeks. Among these early inflections, intonations, and expressive utterances were "squeals of delight, strong grunts of pain or disgust, grunts with the rising inflection of a question, guttural barking growls that reminded the examiner of a dog worrying a bone, shouting and calling to attract attention, and calling in scolding or warning tones. . . ." Shirley notes, in passing that it was impossible to determine whether the expressive tones were a formal outgrowth of development or whether they were acquired by imitation of adults but she holds to the former theory.

In like manner, in the child's understanding of what is spoken to him (which usually considerably precedes his ability to articulate the same sounds), he is responsive to inflections and intonations before he is responsive to the precise pronunciation of vowels and consonants. If he has learned to wave in response to "bye-bye," he may similarly respond to "my-my" or even "pooh-pooh," if these words are spoken in the same tone of voice. An incidental feature of the child's recognition of intonations is the development of ability to distinguish between emotional qualities which an adult endeavors to convey by means of his voice. According to Bühler (7), the average child reacts to a change in the tone of the adult's tone of voice at two months (as when an adult, hidden behind the child, first speaks in a normal tone and "then suddenly begins to growl" or begins to emit falsetto tones), and distinguishes between angry and friendly talking at six months.

In addition to inflections, intonations, and cadences, gestures also play a prominent role before the child has mastered fine distinctions between various vowel and consonant combinations. Gesture language, often accompanied by unintelligible vocalizations and taking such forms as pointing, reaching, and movements

indicating efforts to reject, avert, or accept, frequently serve as a means of communication long before the child can express himself in so many words.

The "First Word." It can be seen that much language development has taken place before the baby speaks his "first word." Actually, it is rather difficult to spot the first word. On the one hand, a child may have used certain sounds in quite specific ways, even though none of these sounds could be found in any known dictionary; on the other hand, he might use an utterance that sounds like a perfectly good word, but it may not be clear that this sound functions as a word or is used by the child in a meaningful way. In other words, he may use utterances that have the sound but not the function of specific words and others that have the function but not the sound of specific words. One mother may credit her child with a "first word" where another would not. As is only to be expected, even the most disinterested mothers are likely to detect one or more words earlier than will an examiner who sees the child only on occasion.

In view of differences in interpretation as to what constitutes a first word, and in view of large differences among individual children, any statement as to the age at which the normal child uses his first word or words must be taken with a certain amount of caution. Even so, however, there is a good deal of agreement, within broad limits, as to the age at which this development appears. In Shirley's study (in which the children represented a selection somewhat above the average of children in the general population), the median age at which the first comprehensible word was spoken in the examiner's presence was sixty weeks, as noted above, while most of the mothers reported that the babies had a vocabulary of two or three words at fifty-two weeks. Twenty-five per cent of the children spoke their first comprehensible words in the presence of the examiner by the age of forty-seven weeks, and twenty-five per cent had not yet reached this accomplishment by the age of sixty-six weeks. The age at which the first word is likely to appear varies somewhat in differ-

ent reports (4, 41). Tentative norms reported by different investigators vary by about two months above and below the age of twelve months; in the case of individual children, the age at which the first word appears will vary from eight months to over two years. In any fairly representative selection of children, the differences between individual children are found to be larger than the differences between the median reported in one study as compared with another.

Nouns constituted the part of speech noted by Shirley most often among children's "first words," but there was also a sprinkling of verbs, adverbs, and adjectives. Pronouns were later in appearance; the median age for the use of pronouns during examinations was ninety-nine weeks.

GROWTH IN LANGUAGE AFTER THE "FIRST WORD"

The appearance of the first well-defined word in the child's utterances does not usually denote a sharp break in the course of his language development, with an immediate, large increase in new words during the ensuing weeks or months. For a long time to come, the child continues to babble and to use a good deal of incomprehensible speech, and during the months immediately following the appearance of articulate words, additional new words may be rather slow in coming to the fore. In a study of size of vocabularies at different ages, Smith (41) found an average vocabulary of three words at twelve months, nineteen words at fifteen months, and twenty-two words at eighteen months. As can be seen, the increase in the averages from twelve to eighteen months is enormous in terms of percentages, but in absolute terms and in comparison with the tremendous number of words yet to be acquired, the increase is not large. At twenty-one months, the average was 118 words, which represents quite a jump over the earlier performance. At two years, the average was 272, again a substantial increase in terms of actual numbers. The averages at later levels follow: 896 words at three years, 1,540 words at four, 2,072 at five, and 2,562 at six (based on only nine

subjects). In general, it may be said that a real spurt in vocabulary is not likely to occur until after eighteen months, even in children who have spoken words several months before that time.

The study just cited reveals, from a research point of view, a state of affairs that frequently is remarked upon as a matter of practical observation in the home. Parents who welcome the child's first comprehensible words often find that new words are added rather slowly, however eagerly they may await them and however much they may try to prevail upon the child to repeat names and words.

Decline in Incomprehensible Speech. An increase in vocabulary is, of course, only one of many developments that occur as the child's facility in the use of language improves with age. As the child adds more and more words to his repertoire, there is a decline in the use of unrecognizable or incomprehensible utterances. In a study by McCarthy (30), it was found that only 26 per cent of the utterances made by children in response to the investigator were comprehensible at the age of eighteen months, while nearly all that the child said (99.8 per cent) was comprehensible to the investigator at fifty-four months.¹ An indication of the child's progress in more or less precise pronunciation is given in a study by Wellman and her associates (49), in which it was found that children at the age of three years (with an average I.Q. of 115.9), correctly pronounced 82.5 per cent of the diphthongs, 75.2 per cent of the vowels, 68.4 per cent of the consonant elements, and 51.8 per cent of consonant blends covered in the investigation. The ability to pronounce words so clearly that any intelligent person can understand them may lag considerably behind the development of a rather large vocabulary. Frequently a child will continue for a time to use a large number of words that can be understood by an older brother or sister, or by the

¹ For a more detailed account of many aspects of language development, see McCarthy (29).

child's mother, while remaining incomprehensible to outsiders or even to the child's father.

There is likewise an increase with age in the length of the child's remarks. When he first begins to "talk," single words are likely to predominate (although a string of sounds with varying inflection and resembling sentences may be noted before that time). Even the single words, however, frequently function as sentences. As McCarthy points out in her discussion of language (29), the single word "mama," with varying inflections and gestures, may variously be tantamount to "mama give me," "mama look," or "there is mama." This type of single-word sentence has been called a "rheme" (5).

Development of Phrases and Sentences. Even the single words thus used are likely to be short ones rather than long ones. Up to the age of two years, one-syllable words constituted about seventy per cent of all the comprehensible words spoken by all the babies in Shirley's study, and of the incomprehensible utterances, about eighty per cent were of one syllable. Shirley noted the beginnings of phrases and sentences shortly before the age of eighteen months, but such combinations of words were relatively infrequent before the age of two years. When sentence formation put in its appearance, it was noted that children frequently tended to repeat a sentence over and over. One child, for example, at sixty-six weeks, repeated "Wha's dat?" seventeen times during an examination and used only two other sentences. This tendency to give a hard work-out to a new-found utterance was noted also, as indicated above, in connection with the pronunciation of consonants, syllables, and words.

The increase with age in number of words per remark has been measured with considerable care in several studies (9, 12, 29, 40). The averages in different studies agree quite closely when based upon a substantially normal or representative selection of children. The average length per remark is considerably higher, however, in the case of bright children. The summary below compares find-

ings obtained by two investigators, McCarthy and Fisher. The McCarthy results are based upon an analysis of fifty consecutive remarks made by each of twenty children at each half-yearly age level from eighteen to fifty-four months. The children were selected from various socioeconomic groups; the average I.Q.'s at the various half-yearly age levels ranged from 103 to 112. Fisher's results are based upon stenographic records of the language of seventy-two preschool children, each of whom was observed for two or three forenoons during their free play in the nursery school or kindergarten. The children in Fisher's study were largely from the upper socioeconomic groups (as measured by occupations and education of their parents), and their average I.Q. was about 130.

TABLE XI
AVERAGE NUMBER OF WORDS PER RESPONSE
AT VARIOUS HALF-YEARLY CHRONOLOGICAL
AGE LEVELS

(Results are shown for boys and girls combined.)

<i>Age in Months</i>	<i>McCarthy Study (30)</i>	<i>Fisher Study (12)</i>
18.....	1.2	3.7
24.....	1.8	4.8
30.....	3.1	4.7
36.....	3.4	5.6
42.....	4.3	6.9
48.....	4.4	7.2
54.....	4.6	9.5

From the summary shown in Table XI, it appears that children of higher average socioeconomic status and higher average intelligence use a larger average number of words per remark throughout the period from eighteen to fifty-four months. A similar trend appears in each of the two studies when comparisons are made between children differing in intelligence. However, the differences cannot be attributed entirely to the two factors just named, for there was a difference also in the circumstances which prevailed when the language of the children was recorded; in McCarthy's study, the situation usually was one in which a child was alone with an adult investigator, while in Fisher's study, the remarks made by the children were mainly directed to other chil-

dren with whom the child was in contact on a nursery-school playground. In a study by Davis (8) of children representing different occupational groups and including a number of twins, the average number of words per remark (in a situation in which each child was alone with an adult experimenter) was 4.6 at five and a half years, 5.3 at six and a half years, and 6.5 at nine and a half years.

Quite as significant as the increase in the length of sentences is the change that comes with age in other characteristics of the sentence. Among other things, there is an increase in the use of "complete" sentences—sentences that are structurally complete with nouns, verbs, and other parts of speech. There is also an increase in the use of complex and compound sentences, although, throughout the preschool period, simple sentences by far predominate over sentences containing dependent or coördinate clauses. Of the sentences used by the older preschool children in Fisher's study, only five per cent were complex and only two per cent were compound. Coincident with the development of more complete sentences is an increase also in the number of verbs as compared with nouns and in the number of conjunctions and prepositions. During this period of development, the increase in the child's language repertory is, of course, associated with development of his mental abilities in general. Among other things, there is an increased use of inflections and verbs, an increase in the use of the past tense (which is infrequent at the age of two years) and in the use of the future tense.

Increases in Loquacity. One notable factor in the child's progress in language is the tremendous amount of exercise which he undertakes, pretty much on his own accord. Several illustrations of this have been noted above in the description of the manner in which the youngster grunts, repeats syllables and consonant sounds, words, and word combinations over and over again. With increasing age, there is an increase in the amount of time spent in vocalization. At six months, a child whose vocal activities were recorded in a study by Gesell (14) vocalized during

three per cent of his waking time; at nine months, the same child occupied over six per cent of his time in the same manner. Results obtained in a study by the writer and an associate (21), in which tallies were made of the total number of words uttered by children during a forenoon in the nursery school (from the time they arrived in the morning until after lunch, a period of a little more than three hours), are summarized below. The total-number-of-words-spoken tally allowed a count of one for each word or each repetition of a word (for example, a count of ten for the word "swing" if the child used this word ten times during the forenoon). The total-number-of-different-words-used tally, on the other hand, allowed a count of only one for each separate word, whether the word was used once or many times (for example, only one tally for "swing" in the above illustration). The latter tally is not as representative as it might be, for the average I.Q. of the subjects was about 130. The figures would, of course, be much larger if the children were observed throughout the day.

TABLE XII

NUMBER OF WORDS SPOKEN AND NUMBER OF DIFFERENT WORDS USED PER THREE HOURS (APPROXIMATELY) BY NURSERY-SCHOOL CHILDREN¹

<i>Age in Months</i>	<i>Number of Children</i>	<i>Total Number of Words Spoken</i>		<i>Total Number of Different Words Used</i>	
		<i>Range</i>	<i>Mean</i>	<i>Range</i>	<i>Mean</i>
24-29	11	236-729	402	60-142	94
30-35	20	99-1,967	763	32-298	153
36-41	22	396-1,990	1,296	111-394	254
42-47	26	332-3,084	1,772	117-552	309

As shown in the above summary, a child's loquacity or verbosity is likely to increase at a faster rate than his vocabulary (the results show more than a fourfold increase in the number of words spoken and a little over a threefold increase in number of

¹ Adapted from Jersild, A. T., and Ritzman, R.: "Aspects of Language Development: The Growth of Loquacity and Vocabulary," *Child Development* (1938), 9: 243-259. Reproduced by permission.

different words used). When matched children were compared in this study, it was found that there was approximately a fivefold increase in loquacity and approximately a fourfold increase in active vocabulary per three hours; and during a period of three three-hour observations, the loquacity increase was about fivefold from two to four years, while the vocabulary increase was a little more than threefold.

The "I's" Have It. Once a child has begun to talk, his language development, while it continues to be an interesting topic of study in its own right, becomes increasingly interesting as a means of studying his mental processes, his interests, and his orientation to the material and social world in which he lives. A study of these aspects of development, as revealed by language, would carry us into fields covered by other chapters in this volume, but certain trends in the child's language from two to five years may be listed briefly. The child's use of pronouns, for example, shows interesting trends. As already noted, pronouns tend to appear later than certain other parts of speech when the child first begins to talk (Shirley found, for example, that the "first word" came at a median age of sixty weeks, while the first pronoun came at a median age of ninety-nine weeks). Once pronouns came into use, however, they are used in great number. This is especially true of various forms of the first personal pronoun.

In a study by Smith (41) of children aged two to five years, *I* had a frequency of 2,543, as compared with a score of 955 for *you*. *I* is especially frequent as compared with other pronouns at the earlier age levels, and it continues to show a high frequency of use throughout the preschool period (and from that point onward, too); but as children advance in age during preschool years, there also is an increase in other forms, such as *we*, *you*, *she*, and *it*. The following summary shows the number of times these pronouns were used at half-yearly age levels in the spontaneous speech of two- and three-year-old children (above average in I.Q.), as recorded during observation of the children on the nursery-school playground.

TABLE XIII

FREQUENCY OF VARIOUS PRONOUNS IN CHILDREN'S CONVERSATIONS¹

Age in Months.....	24-29	30-35	36-41	42-47
Number of Children.....	11	11	11	11
Total Number of Words Spoken During Period of Recording.....	13,124	22,016	46,624	64,352
Pronouns Used:				
<i>I</i> (<i>my, me, etc.</i>).....	1,442	2,991	5,692	5,753
<i>you</i> (<i>your, -self</i>).....	94	468	1,770	2,372
<i>we</i> (<i>our, us, etc.</i>).....	28	177	406	881
<i>he, she</i> (<i>him, her, etc.</i>).....	33	187	437	698
<i>it</i> (<i>it's, -self, etc.</i>).....	155	567	1,206	1,485
<i>they</i> (<i>their, them, etc.</i>).....	24	58	139	266

The foregoing summary indicates that the use of various forms of the first personal pronouns continues at approximately the same rate throughout the age period covered (constituting about one tenth of all words spoken). The use of other pronouns lags far behind the use of *I*, but the rate of increase is larger than the rate of increase in amount of talking. It is interesting to note, in passing, that plural forms show a sharp increase, percentage-wise, at each half-year level, as compared with the preceding; but even at the four-year level, the actual tallies of plural forms are rather small.

The high frequency of the first personal pronoun in the speech of young children might be taken to indicate that the young child is considerably more "*I*-minded" than "*you*-minded" in his outlook. This state of affairs—however one might phrase it—is of some interest, although it is difficult to see how one could expect anything else. A child's own impulses and desires, activities, pleasures, and pains are more vivid and closer to home, so to speak, than is his comprehension of the personalities and concerns of other people. That the child's private and personal concerns stand uppermost in his first reactions to the world about him, in so far as these are revealed by his language, appears not only through his frequent use of *I* but also through the content and tone of his remarks, questions, and demands. However, from

¹ From Jersild, A. T., and Ritzman, R.: "Aspects of Language Development: Words Used Most Frequently," unpublished (New York: Teachers College, Columbia University, 1939). Reproduced by permission.

the time he begins to talk, the very fact that he expresses himself at all bespeaks a certain degree of sociability and adaptation to other persons. This point has been emphasized in a study by Fisher (12) of the content of children's spontaneous speech on the playground. When comprehensible remarks were analyzed according to three categories—self as subject: "I want to be first"; other person as subject: "Mary is coming along"; and thing as subject: "The carriage goes there"—it was found that slightly over one third of the remarks were of the first-named type.¹ The proportion of remarks of this sort remained quite constant from two to five years. However, while his remarks are heavily studded with *I*'s, there also is a vein of sociability running through them, for they at least are usually addressed to another person.

MENTAL ORIENTATION OF THE YOUNG CHILD, AS
REVEALED BY HIS LANGUAGE

The fact that a large proportion of the remarks of a young child deal with himself, his activities, interests, and personal concerns raises the question as to the extent to which he is capable of conversation of the adult type. To what degree is his talk so one-sided as to amount to little more than a monologue, as contrasted with an effort really to communicate with others and to exchange ideas on a give-and-take basis? Strange as it may seem, this rather innocent question touches off a controversial issue which, at first glance, seems quite academic but which actually involves something quite fundamental from the point of view of the understanding of children's mental orientation during early years.

On the one side in this issue stands an investigator by the name of Piaget (35), whose studies of early childhood language and thought have been conducted mainly with European, French-

¹ Fisher's data give the results in terms of a "coefficient of egocentricity," computed by dividing the number of remarks in the "self-as-subject" category by the number in the "other-persons-or-things" categories. The coefficient thus derived is about .50. It should be pointed out that the "egocentricity" here under discussion is not the same as Piaget's "egocentrism," which will be touched upon below.

speaking children. In his analysis of children's language, Piaget distinguishes (among other things) between "egocentric" and "socialized" speech. The egocentric type denotes speech in which there is no endeavor to interchange ideas, to consider the other person's point of view; it represents, rather, a form of "collective monologue," or "pseudoconversation." In socialized speech, on the other hand, the talker really addresses the listener, considers the other person's viewpoint, and endeavors to share meanings and to communicate ideas. According to Piaget, up to a certain age, children think and act more egocentrically and share each other's intellectual life much less than do adults; according to him, there is little in the nature of a meeting of minds or real social life (of an intellectual sort) below the age of seven or eight years; it is not until this age, for example, that children really are able to enter into genuine arguments in which each is aware of the other's point of view and joins issue with it.

This egocentricity, according to Piaget, represents not simply a front which the child adopts in his contacts with others; rather, it springs from intellectual limitations which appear also in the child's own private thoughts. According to Piaget, the child is not conscious of his own thought processes and does not enter into genuine arguments with himself (in the sense that he weighs and checks his own private reasoning and conclusions) until about the age of seven or eight years. It should be noted that the egocentrism described by Piaget is not synonymous with the usual meanings of such terms as "egoism" or selfishness, for it represents a form of obtuseness, or lack of insight and understanding, so to speak, more than a conscious or deliberate form of self-interest and self-assertiveness.

It can be seen that this theory that the child is predominantly "egocentric" rather than "socialized" in his language and in the thought processes underlying his language during the preschool and primary-school periods is significant, not only from the point of view of understanding the child's mental and social development, but also from an educational point of view. Among other

practical implications that emerge from it is the implication that one cannot "reason" effectively with children below the second grade or so. As it happens, however, Piaget's conclusions, as embodied in this theory, have not been confirmed by other investigators. True enough, Fisher, in a study already referred to, found that somewhat over one third of the remarks of children aged two to five years were of the "self-as-subject" variety. The fact that a remark concerns the child himself does not, however, necessarily put it in the "egocentric" category, as defined by Piaget. In studies of more representative samplings of children than were involved in Piaget's investigation, McCarthy applied Piaget's method of analysis as objectively and carefully as possible, with only such modifications as were dictated by the data.

McCarthy found only a small percentage of egocentric responses (not more than four per cent in any group, as contrasted with thirty-eight per cent in Piaget's analysis (30). In a further study, dealing with children's remarks during free play (28), the percentage of egocentric remarks was somewhat higher (6.3 per cent), but still considerably lower than the percentage reported by Piaget. A proportion of egocentric remarks decidedly lower than that reported by Piaget was found also in studies by Day (9) and by Johnson and Josey (23). The latter investigators state concerning the young children in their study that, "instead of finding them egocentric we found them socially minded, willing and able to assume the position of another and even that of an hypothesis." Further, they report that they found nothing to support Piaget's view that six-year-olds "cannot reason because they are too egocentric."

The weight of available evidence goes counter to Piaget's conclusions on the point now under discussion. However, everyone will recognize that there is some change with age in the content of children's talk. Among other things, McCarthy found an increase with age in the relative number of remarks which involved questions, answers, and adapted information. There was an increase also in remarks dealing with the situation confronting the

child and a decrease in remarks in which things simply were named.

As already noted, a relatively large proportion of children's remarks during preschool years are of the self-assertive variety (12, 37). Another feature that is of incidental interest is the relatively large proportion of "negative" remarks in children's comments to one another. In her study of children aged two to five years, Fisher found a steady increase in number of negative remarks ("no," "don't," "I won't," "stop," and the like) as children grew older. In connection with this trend, a tally simply of the number of times children say "yes" and "no" to each other is of passing interest.¹ In one such tally, by the writer (22) based upon verbatim records of the language of eleven children at each half-yearly age level from twenty-four to forty-eight months, the following results appeared:

TABLE XIV

<i>Number of Times Children Say "Yes" and "No"</i>	<i>Age in Months</i>			
	<i>24-29</i>	<i>30-35</i>	<i>36-41</i>	<i>42-47</i>
"Yes"	81	338	470	451
"No"	297	702	635	910

LATER LANGUAGE DEVELOPMENT

Beyond the nursery-school level, the child's language activities become increasingly complex and difficult to investigate, and, at the same time, assume increasing importance in connection with the child's schooling. Sometime between the ages of four and eight years, the child must learn to deal with language by eye, in his reading, as well as by ear; and he must learn to express himself by way of the hand, in writing, as well as by word of mouth. In his reading, and to a lesser extent in his writing, he eventually utilizes an enormous number of words which he seldom or never

¹ As revealed by his speech, the younger child is a "No, I" sort of person, whereas the older child (if he conforms) is relatively more of a "Yes, we," sort of person; but naturally, there are many exceptions.

uses in speech, and his language activities become saddled with the need for many associated learnings—such as spelling, grammar, punctuation, sentence formation, paragraphing, and so on. Obviously, the more these specialized skills connected with language can be suited to the development of the child's understanding and interests, rather than be imposed upon him entirely by way of drills and rote learning, the smoother the road will be, both for him and for his teachers.

Information concerning language development during the elementary-school years is not as complete as is the information concerning younger children. However, certain general trends, of more or less practical significance from an educational point of view, can be noted.

Increase in Vocabulary. One problem that is of some interest is the problem as to the size of the average child's vocabulary. As noted at an earlier point, Smith's findings, based on a limited number of six-year-old children (41), indicated that at this age a child will have a vocabulary of about 2,600 words. Horn (19) has estimated that the beginner at school is likely to have a vocabulary of about 2,500 words. To obtain an exact measure of vocabulary at this as well as at later ages is quite difficult, for methods such as recording the words he uses in conversations or interviews, or in response to a "free-association" test, or in response to tests in which he is called upon to tell the meaning of words read to him from a long list may fail fully to tap his vocabulary.

In later grades, when children have learned to write, a count can be made of the words used in their compositions or letters; but again it would be necessary to cover a wide range of topics to tap the child's resources, and even so the results would be influenced by the child's willingness to use words when he is not sure of their spelling. Nevertheless, the findings that have been obtained are interesting and valuable as far as they go. In a study by Fitzgerald (13), an examination of over 3,000 letters written by children in grades four to six revealed 7,340 different words that were used by children in these grades. The vocabu-

lary of the average high-school senior has been estimated to include about 15,000 words (6a). It seems likely that between the ages of six and sixteen, the English-speaking child acquires new words (which he can use when occasion demands) at an average rate of at least a thousand and possibly two or three thousand words per year. In addition, there are words which he understands when he meets them, even though he may not incorporate them into his spoken vocabulary, and there may be many additional words which he cannot define in isolation but which he can understand from their context. At any given age, there will, of course, be wide differences between individual children. Moreover, even among children with vocabularies similar in size, there will be differences with respect to the particular words included on each child's list; many words will be found to be common to all children, while others would have lower degrees of community, and on each child's list there will be some words not found at all on the list of any other child. In other words, a cumulative list of all the words will be many times larger than the vocabulary of any given child.

Changes in Understanding of the Connotation of Words. Important as yearly increases in vocabulary may be, there is another aspect of language development that is quite as significant. A child's mastery of language develops not only by adding "new" words but also, to a significant degree, through the increased understanding of the connotations of "old" words. This aspect of language development has not been explored to any large degree. A thorough exploration of the meaning or meanings associated with different terms would lead directly into the general field of the growth of understanding and the development of children's concepts and ideas. Discussion of this general subject will be deferred until a later chapter, but certain features may be noted here. In theory, it should be possible for teachers and textbook writers to introduce new words gradually, so that a child may continually incorporate new terms into a familiar context. But this policy is difficult to work out in practice, especially with older

children. In the reading matter of the average child at school, in his own reading matter outside of school, and in the conversations and discussions in which he participates, a large number of the words which he meets will be quite unfamiliar to him, while the meanings of many others are likely to be quite vague. The child himself may use many terms that have relatively little meaning to him, as compared with the meaning intended by the writer or the teacher.

In much of what is presented to the child, the problem is not so much one of complete mastery as opposed to complete ignorance but rather one of varying degrees of understanding. As soon as the child's status in school gets him into the study of such matters as history and geography, for example, it becomes quite a difficult, if not impossible, task to map out a list of terms that can be mastered and "laid by," much as a child might lay by one row after another as he hoes the potato patch. Many of the terms that he meets can be understood only by means of other terms that may be just as unfamiliar. In connection with the subject of history, for example, one might make a list of terms that are going to be used, including such items as colony, governor, taxes, constitution, rebellion, and so on. It might be possible to arrange these in an arbitrary order and try, by arrangement of reading matter and discussion, to help the child to work progressively through the list, mastering the various terms as he goes along. However, it would soon be found that in order to master terms that have been placed at the top of the list, arbitrarily or at random, it is necessary to have some familiarity with the meanings of a number of other words scattered throughout the list. Since a child cannot master everything at once, what actually happens is that he may have a more or less hazy notion of the meaning of a great many terms at a given time. This has been found to be the case in studies that have been made.

Illustrations of Vague Meanings. In one study (3) records were made of many of the terms used by teachers (in two classes) and by pupils in class discussions of social affairs, and tests were

then made to find how well the children understood these terms. It was found that many of the children had little understanding of a large number of these terms. The word "monopoly," for example, had been used frequently, but only a handful of children appeared to have a clear notion of what the word meant.

In an earlier study by Scott and Myers (38), children in the fifth through the eighth grades were tested on a list of terms taken from history and geography. It was found that the meanings of many terms which they met frequently in their reading and class-work were quite vague to them. Less than forty per cent of the children below the eighth grade were able to give "reasonably correct" definitions of such terms as "colonists," "taxation," "minister" (ambassador), and "constitution." In a seventh-grade class, some of the children were under the impression that, since Benjamin Franklin was a foreign *minister*, he must have been a clergyman. Undoubtedly, results on a test such as this would vary with different groups, and it is likely that children might do better on some terms if they were called upon to give an oral explanation rather than to give their definitions in writing. In spite of variation between schools and between brighter and duller pupils, it is likely, however, that the trends observed in this study would be confirmed more or less in the upper grades of practically any elementary school. That this is likely to be the case is indicated by preliminary results in a study by the writer covering a large selection of public- and private-school classes.

Further indications along the same line are shown in another interesting part of the study by Scott and Myers. Among other things, the children were asked to name two explorers and then were asked: "What is an explorer?" Forty-one per cent of the children named explorers but failed to define what an explorer is, when definitions were scored according to the standards set up by the study.¹ In other words, the children had memorized

¹ For other studies dealing with children's understanding of terms, see Kelley and Krey (24), Pressey (36), Kelty and Moore (25), and Wesley (50), as well as studies cited in Chapter XI.

factual items associated with a given general term, without being able to define the concept designated by that term.

At first glance, it looks as though courses of study, textbooks, and teachers have bungled the job when a number of terms of rather common usage seem vague and unfamiliar to a substantial percentage of the pupils. Such a state of affairs suggests that it would be better to postpone these terms and concepts to a later grade at school; or one might jump to the alternative conclusion that better teachers and better teaching methods are needed. However, it is questionable whether either or both of these conclusions actually solve the problem. A certain amount of vagueness and unfamiliarity is practically inevitable during the early stages of a child's first contact with certain terms. For a time, many terms are likely to be more or less meaningful, rather than completely meaningful or meaningless. Meanings are likely to enlarge and to become more comprehensive as the child makes further contacts with the term in different contexts.

As noted above, in the case of many terms, a child's grasp of a given term may be in the nature of more or less understanding, rather than complete ignorance or complete mastery. Thus in a "multiple-choice" test, he may choose the most nearly correct answer when asked whether a *tax* represents: (a) an animal, (b) a man who runs things, or (c) money one has to pay. On the other hand, he may be unable, when asked for a straight definition, to tell who collects taxes, who pays, and how and why. Among the children who can offer some explanation of the term, there may again be varying degrees of understanding. One child (who has had experience with a sales tax) may answer that a tax is the extra penny you pay when you buy some toothpaste, but he may not be able to carry his explanation further; at the other extreme, there may be a child who has a pretty good notion concerning the collection and uses of tax moneys. Illustrations of varying levels or degrees of understanding appeared in an unpublished study by the writer in which children were asked, among other things, to tell what is meant by a *strike*. To some children, the

term had no other meanings than those connected with the verb *to hit*. Most of the subjects who were questioned in the fourth through the sixth grades had other associations with the term. At one extreme, there were children who could offer little more than answers such as the following: "It's when people break windows and throw stones at the police"; or "It's when people walk outside a shop with signs on their backs with words like 'unfair' on them." Answers such as these, it can be observed, phrased in terms of visual images drawn from pictures or actual observation, indicate that the child has a notion that a strike involves conflict of some sort. Still more comprehension of the term was revealed in an answer such as: "It's when the workers and the bosses have an argument and the workers stop working," which indicates that the child knows there is a dispute between employers and employees, even though he may not be able to define things further. At a higher level of understanding, the child may not only mention the fact of a dispute and describe the parties to the dispute but he may also describe the issues involved, such as demands for more pay or shorter hours and so forth. At a still higher level of comprehension, there were a few children who not only described what happened in a strike and the issues that might be involved but also went so far as to elaborate upon steps that might be taken to break a strike and the possible effects on the employer's business or on the workers' buying power if the strikers won.

The foregoing comments, while indicating some of the complexities involved in the development of vocabulary and understanding of the concepts which various words denote, leave unanswered many questions that have practical significance in the education of children. There is need for considerably more research than as yet has been devoted to language development during elementary-school years. This need is especially apparent in connection with projects in which children are encouraged, among other things, to undertake readings and investigations "on their own," and therefore often will pursue their studies into reading

matter designed for the general adult reader rather than especially for children. The increasing emphasis on the "social studies" in many schools in recent years likewise has sharpened the need for more knowledge concerning children's comprehension of the terms that are used and the background of experience which they are able to bring to bear in interpreting and in learning to comprehend these terms.

RELATION OF LANGUAGE DEVELOPMENT TO OTHER FACTORS

Language development obviously is more or less related to and integrated with practically all other aspects of the child's development, but certain factors may be isolated for separate attention.

Learning and Growth. One point that deserves attention is the question as to the role of growth as distinguished from learning in producing some of the developments and sequences described above. It is obvious, of course, that learning plays an important role, for it is only by having an opportunity to hear words spoken that the child himself can acquire a vocabulary in a given language. This can be recognized, but it still leaves the question as to the extent to which the course of language development, as it normally occurs, might be modified by special environmental circumstances. On this question there are certain lines of direct and indirect evidence.

Quite apart from systematic study, everyday experience with infants gives the impression that a child's progress during early stages of language development depends to a large degree upon the child's own rate and style of growth. He learns to talk by being talked to, but beyond the rough and undefined limits of what might be called "normal" attention, it does not follow that the rate of his progress will increase in proportion to the amount of extra stimulation that he receives. Whether he is talked to little or relatively much, he seems to acquire his "first word" and additional words in his own good time. Just how much a child's early progress in language might be expedited if optimum language stimulation in the home environment were supplied has

not been determined. If the "optimum" could be determined, it no doubt would be found that the method of stimulation is quite as important as the amount. In everyday observation of children with their parents, one can often see parents make what appears to be futile efforts to "teach" children to talk; one might find, for example, a father with an eighteen-months-old child on his lap, slowly paging through a magazine, pointing to each illustration, and directing an earnest glance from the page to the child and back again to the page as he names each illustration in measured tones. The child, meanwhile, gives little heed. A different result may accrue if, instead of presenting a large number of stimuli (each of which is quite unfamiliar and perhaps quite vague as far as the child's perceptions are concerned), a child's attention can be called to objects, gestures, and words as features of a total situation that actually concerns him for the moment. Even under optimum conditions, however, the child's progress during the first year and a half or two would be quite limited, as compared with the gains he would be able to make at a later time.

That changes associated with growth, as distinguished from special stimulation, play an important role in early language development is indicated by the findings in a study by Strayer (44), which was reviewed in an earlier chapter.

Language as Related to Socio-economic Status, and Age of Associates. The fact that the child's capacity for the acquisition of language during early stages of language development seems to depend to a large degree upon "growth" factors does not rule out the possibility that environmental conditions may also have an important influence. It has been found, for example, in studies at the preschool level, that there is a relationship between children's language and the socio-economic status of their homes (9, 12, 30). Children of higher socio-economic status surpass those of lower status in such matters as length of sentences used, frequency of questions, proportion of remarks involving adapted information, and vocabulary. A part of this difference is no doubt due to the fact that children of higher socio-economic status also tend to be

brighter than children of lower status, but it appears from available evidence that children living in a superior environment would have some advantage even if the factor of intelligence were equalized (48, 51). To what extent the superiority of children of higher socio-economic status may arise simply from the fact that they live in an environment that affords the stimulus of a richer vocabulary and greater literacy, the data do not tell. It may be conjectured, however, that the advantage, such as it is, enjoyed by children in families of higher socio-economic and educational status may in part be due to the fact that their parents are able to spend more time with them. For one thing, as will be touched upon elsewhere, such parents have fewer children on the average than do parents of lower socio-economic status. In this connection, it may also be noted that there is evidence indicating that children who associate primarily with adults are more precocious in their language development than are children who associate mainly with children (30, 8).

Language of Twins and "Singletons." It has also been found that twins tend to progress less rapidly in their language development from two to five years than do "singletons." In one study of twenty pairs of twins at each yearly age level from two to five years it was found that, on the average, the twins began to talk one month later than their older brothers and sisters (9, 10). In another study that included children up to the age of nine and a half years (8), it likewise was found that twins lagged behind singletons; by the age of nine and a half, twins from upper occupational groups had practically overcome their handicap, but twins from the lower occupational groups were still inferior in language. Quite apart from any hereditary or congenital factors that might exert an influence, the phenomenon is no doubt due in part to environmental factors. Among other things, the type of companionship which twins afford each other may mean that there is less occasion and less motivation for reaching out by means of language to communicate with others. It appears in some cases that twins can communicate with one another by means of fewer

words than would be required to communicate the same meanings to someone else. Facial expressions, gestures, and other subtle signs, as well as grunts, single words, cryptic murmurings, and the like, which each has learned to understand through close companionship with the other, may take the place of the conventional flow of words and sentences. It has also been found that only children tend to surpass "singletons" who have brothers and sisters (Davis, 8).

Sex Differences. Girls have been found to surpass boys in many aspects of language development, such as in amount of talking, number of different words used, and use of sentences, in several investigations, although the amount of difference that has been noted has varied in different studies, and has not uniformly been reliable from a statistical point of view (see, for example 8, 12, 21, 30, 51). Similarly consistent differences have not been found in the written language of older children.

Variable Factors in the Motivation of Language. As noted earlier, the normal child seems to have a strong impulse to exercise his vocal repertoire during the early stages of language development. The motivation behind speech can, however, be influenced to some degree by factors in the child's environment. In everyday life, one can sometimes see signs of this when a child shows a "negativistic" attitude and maintains a stubborn silence when others try to coax him into talking or pronouncing a new word. It appears that this reaction sometimes arises if the child's elders show more zeal than wisdom in their efforts to get the child to talk. Whether such "negativistic" reactions may become so frequent and generalized as to interfere with language development has not been ascertained by systematic research, but instances of refusal to talk or of resistance to talking, except under special conditions, are sometimes observed in clinical practice with older children.¹

Systematic evidence is likewise lacking concerning possible effects of other forms of overattention on the child's early language

¹ For an account of a child who refused to talk, see Nice (33).

development. Theoretically, the more a child's needs and whims are anticipated and the less he is called upon to voice his wants and to put his desires into words, the less need there will be for him to learn to talk. The following case is illustrative; it is the case of a three-and-a-half-year-old girl who, as far as could be ascertained, was quite intelligent but who came to be named by neighbors and nursery-school teachers as "the girl who won't talk." When spoken to or questioned, her usual response was complete silence. Inquiry into the case revealed that the mother overwhelmed the child with attentions at all times; observers noted that the mother watched the child's every move and tried to anticipate her every wish. The child's silence, while apparently due in part to the fact that so many of her wishes were anticipated, also appeared to represent, in part, a form of passive resistance to the domination of her parent.

That the child actually could talk was shown once in a mental test situation. The tester took the child to the mental testing room, went through the motions of preparing things, but said not a single word. She then sat down opposite the child, looked over the test materials, rearranged the layout, and ostensibly was quite busy, but still kept completely silent. Only a few minutes of this "silent treatment" had elapsed before the child (who was a problem because she "wouldn't talk") squirmed slightly, raised her arm as though to point, and finally broke out with a friendly: "What's that?" The policy of ignoring, instead of coaxing and cajoling, had the effect of impelling the child to go at least half way; and after her opening remark, further conversation ensued. In this particular case, which is somewhat extreme, the child's unwillingness to talk represented an acquired social technique, rather than a genuine language handicap.

Occasionally a child will be inhibited and self-conscious in his use of language with other children, and difficulties in language development may have an important bearing upon a child's social relationships with other children.

Use of Baby Talk and "Talking Down" to Children. Adults sometimes are tempted to meet the young child on his own ground by adopting his mispronunciations and his ungrammatical constructions. Since normal children usually manage to outlive their baby talk, this policy may do no harm, and certainly it is better at the start to tolerate and even to share the child's mistakes than to make a moral or disciplinary issue out of them. On the other hand, there obviously is no point in setting a model of incorrect usage. A curious perversion of "talking down to children," in the form of bad grammar and distortions of words, sometimes appears in writings for children and in radio and motion-picture scripts. Such practices, while apparently designed to make child characters seem "natural," may actually have quite the opposite effect and may make the character seem artificial, unless the jargon is genuinely amusing.

LANGUAGE AND INTELLIGENCE

A positive relationship is usually found between language ability, as measured by various means, and general intelligence, as measured by standard tests. Since the understanding and use of words play so large a role in many intelligence tests, it sometimes is difficult to determine just what this relationship means. Does the child earn a good score on a verbal intelligence test because he has a good command of language or does he have a good command of language because he has good intelligence? A straight yes or no answer cannot be given to either of these queries; but even if we side-step the issue, there remain some general facts and trends that can be pointed out. Among other things, it has been found that children who in time turn out to be "feeble-minded," as measured by mental tests or other criteria, begin to talk at a later age than do children of normal intelligence. In studies by Mead (32) and Town (46), the data indicated that mentally defective children began to talk almost two years later, on the average, than normal children. On the other side, in Terman's study of gifted children (45), the data indicate that children who score high on

intelligence tests (I.Q. 130 or more) when old enough to be tested are likely to begin talking at an earlier age than children of normal intelligence. In other words, there is a relationship between mental ability as exhibited in later childhood and onset of talking in infancy and early childhood.

Findings on this subject are reported by Shirley (40), who not only obtained reports from mothers (on which some of the earlier studies in this field were based) but also observed and measured the responses of her subjects while language was in the process of developing. Shirley correlated various measures of language development with intelligence, as measured by the Minnesota Preschool Scale (the computations represent 17 subjects). Most of the coefficients were quite high, as coefficients go. Between *cumulative vocabulary* and the score on the mental test there was a correlation of .63 at eighteen months and of .76 at two years. The corresponding respective coefficients of correlation between mental test scores and *number of different words* spoken by the child per examination period were .63 and .74; and in the case of *vocalization developmental score*, the respective coefficients were .15 and .69. It will be noted that all coefficients were higher at two years than at eighteen months.

To be sure, this relationship is not so high that early language development can be used to predict later intelligence, except within broad limits. If a child is quite precocious in his language development, this may be taken as a pretty good sign that he is at least normal in intelligence and probably is somewhat superior. On the other hand, if he begins to talk at the average age, this does not preclude the possibility that he may turn out to be bright; just as a delay of some months, as compared with the average, is not at all a certain indication that he is likely to turn out to be somewhat dull. Similarly, in the case of more marked retardation, although a mentally defective child is likely to be late in talking, it does not necessarily follow that every child who is late in talking is feeble-minded.

It is possible that more systematic research concerning this topic

might reveal more definite trends. It would be instructive if the relationship could be measured after due account has been taken of the possible effects of such variables as amount of stimulation, education of parents, age of association, and other factors that might influence the child's early progress in learning to talk.

BILINGUALISM

Throughout our own country and in the world at large, many children are called upon to adjust to two different languages. The problem of bilingualism is interesting, not only from the point of view of children who live in homes that use a foreign or unofficial language, but also, to a lesser extent, from the point of view of the educational problem as to when instruction in foreign languages might best be introduced in the curriculum. For a systematic inquiry into the subject, it would be necessary, of course, to take account of many factors. For one thing, the ways in which a child is called upon to adjust to two different languages may vary decidedly. In one situation, he may meet one language almost exclusively until he reaches school age and then be called upon to acquire a new language. In another situation, he may be confronted with two languages from the start. Here again there may be many variations; the two languages may be on an almost equal basis or one may predominate over the other in varying degrees, or one child may be called upon to use both languages, while another, under other circumstances, may be reared to speak in only one language but to understand when spoken to in another language. Furthermore, a child's ability to manage in a bilingual environment will be influenced by such factors as his general intelligence and the methods of instruction that are used. His progress in each language, as well as his adjustment to the bilingual environment, may also be complicated by ridicule, prevailing prejudices, feelings of inferiority, and other tensions in the social and emotional sphere. These latter matters have received relatively little systematic attention.

Theoretically, if a child is called upon to acquire two different

languages, he should make slower progress in each than he would make if he were learning only one. That children may be handicapped in this way is indicated by findings based upon studies of a limited number of children (42). From observations of a family of eight children (43) who made frequent moves between China and America and who were exposed to the two languages for varying periods and from different sources, Smith concludes that a bilingual environment is not likely to delay the first use of words; the handicap is likely to appear later. It should be recognized that a child might be below standard in the use of each of two languages and still make a good showing if a scheme could be found for crediting him with his proficiency in both languages combined. Smith's observations suggest that it probably would be better for bilingual children to receive their separate languages from separate sources, rather than to be spoken to by the same adult now in one language, now in another. To apply this principle would no doubt involve practical difficulties in many situations.

Whatever may be the effect of being confronted with two languages during the early stages of vocabulary and sentence formation or at a later time, the available data certainly do not indicate that this circumstance in itself has a damaging effect on otherwise normal children. The necessity of adjusting to two languages does not at all mean that the child's mental processes will be thrown out of gear. Although some children may be at a disadvantage, especially if a social handicap is involved, it is not unlikely that, in some cases, the advantages of having to learn to deal with two languages quite outweighs the disadvantages. That a child's mental growth and ability to cope with the work at school are not seriously affected is indicated in a study by Arsenian (1) in which comparisons were made between a group of monoglot children and a group of bilingual children, matched person for person on the basis of race, sex, socioeconomic status, and age in months. Among the subjects in this study were over a thousand American-born children of Italian parentage, over a thousand American-born Jewish children, and smaller samplings of foreign-born

Italians, foreign-born Jews, and children of mixed parentage. The children ranged in age from nine to fourteen years. No reliable differences were found between the two groups in average intelligence or in age-grade status.

As a part of this study, comparisons were made within the bilingual classification between children from homes in which a language other than English was used relatively much and children in whose homes another language was used relatively little. Here again, no reliable differences in intelligence or school progress appeared when factors such as socioeconomic status, age, and sex were held constant, and the two groups were also similar in average scores on a nonlanguage intelligence test.

Somewhat more difficult to probe than the effect on mental growth of the necessity for adjusting to two languages at an early age are the possible effects that bilingualism may have on a child's social and emotional adjustments. A child from a foreign-language background may, in some situations, be subject to teasing and ostracism. Even when no such unpleasantnesses arise, the child himself may be self-conscious with regard to his background and language, and may be timid (or sometimes overassertive) when called upon to express himself, especially if he is in the process of transition from one tongue to another, still uses accents and speech forms from the foreign language, or still "thinks" in a foreign language. Such effects as ostracism, teasing, and feelings of inferiority by reason of bilinguality are, undoubtedly, less likely to arise if the child is a member of a rather large community in which the majority of the children are of the same national origins and have much the same home background, as far as language is concerned, than if the child is a member of a small minority or stands alone. However, the effects will vary in different communities and with different children. In one situation, a child with a foreign-language background may meet persecution from his associates, especially if strong prejudices prevail among the children's elders; in other situations, his condition may provoke little

or no notice, or he may even win admiration by reason of his knowledge of another language.

SOME CHARACTERISTICS OF THE WRITTEN LANGUAGE AND ORAL DISCUSSIONS OF ELEMENTARY-SCHOOL CHILDREN

As might be expected, there is an increase with grade in the average number of words used per sentence. During elementary-school years, children show a continuation of a trend, already discernible during preschool years, toward the use of longer and more complicated sentences. This trend is quite gradual, however, and simple sentences continue to outnumber all others well into the elementary-school grades. Table XV, based on a study by Hoppes (18), shows the relative frequency of various sentences used by children in Grades III through VI.

TABLE XV

PERCENTAGE OF EACH TYPE OF SENTENCE IN THE TOTAL NUMBER OF SENTENCES WRITTEN IN EACH OF GRADES III, IV, V, AND VI¹

Type of Sentence	Grade			
	III	IV	V	VI
Simple:				
Boys.....	53.9	50.3	48.8	46.2
Girls.....	56.9	48.4	44.9	40.2
Complex:				
Boys.....	29.2	31.3	32.7	34.5
Girls.....	27.6	34.6	36.2	38.3
Compound:				
Boys.....	10.5	9.6	9.5	9.0
Girls.....	9.8	9.1	9.7	10.1
Complex-Compound:				
Boys.....	6.5	8.8	9.0	10.4
Girls.....	5.7	7.9	9.2	11.3

As noted on an earlier page, the pronoun *I* is worked pretty hard in the conversations of preschool children and this pronoun is likely to appear frequently also in the writings and conversations at later age levels. However, in terms of relative frequency, there

¹ By Hoppes, W. C.: "Some Aspects of Growth in Written Expression," *The Elementary English Review* (May, 1933), 10:67-70. Copyright 1933 by C. C. Certain. By special arrangements with the publisher.

is likely to be a decline with age in the proportion of *I*'s to the total number of words used (34). In a study by Hoppes (17), it was found that, in one series of papers, the pronoun *I* was the subject of the initial sentences in more than fifty-five per cent of the compositions written by third-grade pupils and in less than twenty-five per cent of the compositions written by sixth-graders.

More significant, but more difficult to measure and to evaluate in detail, are the changes that come with age in the use of abstract terms, of adjectives, adverbs, and modifying phrases to denote qualities, and in the selection of one word rather than another to denote shades and nuances of meaning.

Grammar, Punctuation, and Other Language Problems. From a practical point of view, errors in written or oral English are serious in proportion to the extent to which they prevent the writer or speaker from making his meanings clear to others. If this were generally recognized, we would less often find parents and teachers who look with abhorrence upon incorrect usage as something sinful. Many a child, at home and at school, has had his enthusiasm and interest sharply deflated by rebukes or letting slip into his discourse such phrases as "he ain't" or "they was," when it might have been better to applaud him for having had a good idea (if that was the case). To be sure, this does not mean that incorrect usage should be encouraged.

It may be emphasized that much of what is regarded as "correct" usage is as easy to learn as is incorrect usage. Many errors that children commit are errors they have learned from their elders or playmates, rather than errors in reasoning or evidences of carelessness or perversity. In general, it may be said that poor grammar is no more "natural" than is good grammar.

It undoubtedly is more important that the child has something to say and that he feels free at appropriate times to say it than it is to insist upon perfection in the details of the manner in which it is said. It is then possible, in turn, for the parent or teacher to deal with the manner of expression and to discuss errors, not from the point of view of errors that are bad in themselves, but from the

point of view of difficulties that the listener or reader may have in understanding just what the child means. A child who has difficulty in learning correct usage as something valuable in itself may get the idea more readily if it is pointed out to him that his meaning is not clear when he uses quotations without quotation marks, "run-on" sentences, fragments of sentences, misplaced modifiers, and pronouns that are indefinite as to antecedent or ambiguous by reason of being in the improper case, or if he fails to use question marks or commas at crucial points. In connection with this problem, it should be recognized that much of what constitutes "good" grammar, "correct" spelling, punctuation, and so forth is based in part upon arbitrary convention, and that, apart from rote learning in the field of spelling, many of the formalities are in the nature of patterns which conform (more or less) to adult ways of thought but which may not correspond to the child's way of thinking. As noted earlier, just the matter of speaking in complete sentences, with a subject and predicate, is something which the average child does not acquire until he already has made considerable progress in talking, and undoubtedly, to the child's way of thinking, many units of thought may seem quite complete without conforming to the pattern of a complete sentence.

An approach which emphasizes form only by way of an emphasis on meaning would fail, however, to cover all of the details of correct usage that usually are stressed in the grades. If a child writes or says: "Me and him ain't never seen none of them monkeys," his meaning is quite clear, even though his grammar is not of the best. Accordingly, if a teacher goes to work on this child, her corrections must be based mainly upon arbitrary rules and conventions.

The Problem of Readiness for Self-Correction. Just how instruction in grammar, punctuation, and such matters might best be introduced, and, quite as important, just when in the child's development various items of "good" usage might best be emphasized, cannot be answered with any degree of assurance on the basis of present evidence. Some clues are supplied in the evidence at

hand, but more research is needed; one thing that is especially needed is further study of the development of the child's ability to understand the logic (such as it is) of good usage and of his ability to discriminate between various types of correct and incorrect usage. It is likely that a study of the problem from the point of view of the habits and comprehension of children might reveal that methods and emphases would have to vary considerably with children from varying backgrounds. Much of the time and effort spent in teaching correct English takes the form of trying to prevail upon children to change language habits which they already have learned at home or on the streets. One child says "them things" just as "naturally" as another, from a more cultured home, says "those things." The latter may be no wiser and know no more formal grammar; he speaks this phrase correctly simply by virtue of the fact that he has seldom heard the matter put in any other way.

By far the greatest amount of "correct" grammar is learned incidentally, by hearing others speak and through one's reading. It would be well if more were known concerning just what items of correct usage are likely to be acquired in time, by way of incidental learning, in connection with general reading, class discussion, and the like, as contrasted with items that might profitably be singled out for emphasis and special drills.

Persisting Errors. One line of study that has been followed in this field is the investigation of the types of errors made by children at various age or grade levels. A review of numerous studies in this field (27) indicates that most of the errors that occur during the elementary-school grades fall in a relatively small number of classifications. Among the most frequent errors in children's compositions are errors of punctuation, capitalization, case of pronouns, use of adjectives and adverbs, and use of verbs (16). While there is likely to be a decline in frequency of error with advancing grade, many types of error continue to reoccur through every grade in the elementary school and throughout high school. Certain types of error are, of course, likely to occur more frequently than

others. Thus, a majority of children have learned in the early grades at school to capitalize the first word in a sentence; on the other hand, a large percentage, even near the end of high school (as well as through college, postgraduate work, and thenceforward to the end of life), will falter in their use of the semicolon (15).

The persistence of certain types of error does not arise simply from the fact that children have failed to profit from earlier instruction (although this may be the case in some instances); the reason, at least in part, is that, as the child advances through the grades, the ideas and topics which he tries to express are likely to become more complex, with the result that he still may have difficulty in putting his thoughts into correct form; for what he has mastered in earlier assignments may not entirely meet new needs.

Children's Conversations and Oral Discussions. In view of the increasing emphasis that is being placed upon oral reports and open discussion (often under the chairmanship of a pupil) in elementary schools, it would be valuable to have information pertinent to this practice—to know, for example, the types of subject matter that seem most interesting and stimulating at various grade levels, the characteristics of class discussion at various grade levels from the point of view of extent of participation by different children, problems involved in managing discussions, tendencies to talk to the point or to shift from one train of thought to another, tendencies toward an egocentric “star” system of discussion, as contrasted with an interchange of information and argument on a give-and-take basis.

Some interesting findings appear from a study (52) based on records of the conversations of thirty third-grade pupils during free periods in the classroom. By virtue of the small number of cases and the special conditions under which they were observed, the findings cannot be regarded as conclusive, but they do illustrate some of the many factors that might be explored in further research. The contents of the conversation samples were classified and tabulated under ten general headings. There was a good deal of fluctuation during the course of the experiment in the percent-

age of time spent on a given subject, but certain trends were noticeable. Among the subjects on which a large percentage of the discussion centered were home play, animals, auto trips, and schoolwork. As the experimental period progressed, there was a trend toward more universal participation in the discussion; but at no time, however, was there anything approaching an equal amount of participation by all children.

The conversations and discussions of groups of children will, of course, be influenced to a large degree by social factors and by the personal characteristics of individual children. Certain general age trends may, however, be observed. First, the younger the members of the group, the more likely it is that the discussion, unless held in line by the teacher or by an exceptionally able child, will touch briefly on a miscellany of topics, as each child, in turn, tries to be heard and speaks in terms of his own personal experiences and reactions, without contributing to an ordered or unified treatment of a topic. Children in the fourth grade and upward are more likely to deal with topics not so directly related to their own experience and to join issue, to obtain a meeting of minds, at least to some extent (2).

The extent to which there is a meeting of minds, an interchange of information, as contrasted with a "lone-star" performance by each child, will vary in connection with different projects. In a study by Mabie (31) of the conversations of first-grade children in various situations, it was found that some enterprises produced decidedly more interchange than did others. In connection with a game of ring toss, for example, over seventy per cent of the remarks made by the children were of an "egocentric" character (consisting mainly of comments of a "monologue" type, dealing with the child's own performance). On the other hand, in a project consisting of gathering material and organizing a store, only seven per cent of the remarks were of this character; the remaining remarks were more socialized in nature, consisting of interchanges of information relevant to the project, questions, commands and requests, answers and criticisms.

In an investigation by the writer and his associates of pupil participation in class discussions (20), it was found that, although the classes differed considerably in size and, to a large extent, in general procedure, there were certain outstanding characteristics common to all. In each class there were a few children who did most of the talking. In the various classes, the amount of talk contributed by the most loquacious children was equivalent to the combined contributions of from five to fourteen of the least loquacious children. The three most avid talkers in the various classes contributed a large proportion of all that was said. This lopsided distribution occurred in classes with enrollments as low as twenty and as high as forty-eight. It occurred whether the discussions were under the direction of the teacher or a pupil chairman (although under the latter condition, it tended to be even more lopsided than under the former). The amount a given pupil would participate bore relatively little relationship to his knowledge.

There was a relatively low and, in some classes, even a negative relationship between the amount of talking children did and the scores they earned on various tests of knowledge and mastery of subject matter. Indeed, some of the best-informed pupils talked least. The extent to which a pupil would express himself apparently depended considerably less upon what he had to contribute than on his desire to be heard. It is only fair to say, in passing, that similar trends usually hold true in adult discussion groups. Likewise, it was noted that children with a passion for talking would become strangely silent for a time when the discussion dealt with matters of fact rather than matters of opinion and then, in due time, would strive lustily to divert the discussion into more general topics or into special areas with which they happened to be familiar. This unbalance in pupil participation may not hold true in all situations, however, and it is possible that techniques can be used to alter it.

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CHAPTER VI

DEVELOPMENT OF SOCIAL BEHAVIOR

From the time when his life begins, each child is very much a social being although at the start he plays the passive role of one who receives much and gives little. Even before birth he has a profound influence upon those about him. Once he is born, his social influence becomes even more marked. The mother is moved to cherish, protect, and care for the newborn child, unless the child's birth brings extreme physical or emotional complications. Even the father (who at the time of the blessed event is looked upon as a supernumerary) is likely to be drawn to the newcomer with affection and to experience sentiments of a sort that are unknown to him until his first child is born. Whether we regard these parental sentiments as instinctive or acquired, they represent an important feature of the social world into which the child is born.

It is not until some time after birth that the child himself responds to other persons as such. Apart from such experiences as he may have in connection with nursing, it appears that human beings—the sight of them, the sound of their voices, and the things they do in his presence—are not, at the start, set apart in his experience as something unique and different from other contacts, sights, and sounds. From the time of birth, however, even while he himself is still quite passive, strong ties are being established between him and other human beings. Interwoven with the child's earliest experiences and expectations, and intimately connected with his very survival from day to day, are associations with other human beings and their activities. These associations accumulate as he emerges from the somnolence of the first few days of life, and they multiply during the ensuing weeks and months as he grows more alert to what is happening about him. These ties, born of

his complete dependence upon others, only dimly defined in his earliest experiences, and taken quite for granted at a later time, remain powerful influences as long as the individual lives. As time passes, he becomes more independent, and as his individual powers increase, he asserts himself in opposition to others. His self-assertion may even reach the point of apparent defiance of society and all its ways and works. But whatever may be the front that he assumes, never is he completely weaned from his dependence upon others; never does he become so self-sufficient that he is immune to the approval or disapproval of his fellows, or free from desire for the affection of others and for some measure of security in his relations with his fellow men.

The story of social development is also a story of the child's individualism, his endeavors to assert and express himself as an independent creature. In the normal course of events, he becomes more "social" as he grows older, forms ties with other persons, and acquires values and aspirations that have a social orientation. But, contemporaneously with this development, he also learns to become more "individual," to assert himself, to be independent, and to have a voice in the management of his own affairs.

Actually, a child's socialization and his individualization are features of a larger process of development, but neither feature should be overlooked; each has important values. In adult parlance, we sometimes speak of "individualism" and "socialism" as though they represent tendencies that are mutually exclusive and inimical. If we look to the growing child, however, we find that this is not the case. The run-about child is highly individualistic but, at the same time, highly sociable. On the individualistic side we may note at various stages of the child's life his self-assertiveness, negativism, readiness to protect his own interests and to rebuff invaders, as well as his competitiveness, and absorbing personal ambitions. On the "social" side, we may note his early impulse to smile and laugh in the company of others, to solicit their company, and to join, when he is old enough to do so, in common projects with others; his occasional displays of sympathy

when he is small and of compassion and devotion when he is older; his evident desire for social approval, for belonging; his eventual loyalty to his group, his patriotism and readiness even to die for a common cause. It is only through social survival that the individual survives, but it is only through the survival of the individual and of some measure of his self-centered concerns and ambitions that society survives. A young child neatly illustrates, at one and the same time, both the social and the individualistic trends. Frequently, to be sure, there may be an imbalance, as one or the other tendency becomes unduly strong; just as in society at large, individualism may run riot or the individual may be completely submerged for a time, until upheavals occur that correct the damage that has been done.

SEQUENCES IN SOCIAL BEHAVIOR

Occasionally an infant as young as two or three weeks will fix his eyes upon his mother's face and smile in response to her smile, but it is difficult to tell whether such apparent social communication is more than a chance happening. A more definite sign appears when the infant, by about the end of the first month, ceases his crying at the approach of the mother, and later when he smiles at the sight or sound of other persons and turns his head in the direction of a speaking voice.¹

At the age of three months, a child may cease his crying when he hears a human voice and begin to cry when an adult leaves his presence. Searching movements to locate an approaching adult are more in evidence at this age, and a child may smile at the approach or gaze of a person. At four months, most children will make gestures and assume a posture preparatory to being lifted (some children exhibit this a good deal earlier). They will continue to look in the direction of the face that has disappeared, smile when spoken to, and laugh in response to playful attentions.

By the fifth and sixth months, there is a further increase both in

¹ The development of social behavior in infancy has been described in considerable detail by Gesell (17), Bühler (2,3), and Shirley (50).

the infant's discrimination of social stimuli and also in the number of activities he himself directs toward others. Until the age of five months, smiles, in response to the gaze or the voice of another person, are likely to appear whether the voice is friendly or angry in tone or whether the gaze is accompanied by an angry or friendly expression. At five months and thereafter, however, the infant shows more discrimination of tone and expression (Bühler, 2); he may smile in response to a friendly approach but may show a different expression, and even begin to cry, in response to an angry look or voice. A few months later, however, if the occasional angry look or voice is not accompanied by further unpleasantness, the infant may again revert to smiles and positive gestures in response to playfully "angry" tones and expressions. During the fifth month, the infant likewise becomes more active in his advances toward others by way of vocalizations and attempts to grasp and to touch.

A further development which appears during the first half-year of life is the ability to distinguish one person from another. Signs that the child recognizes his mother may appear at three months or even earlier, but the ability to distinguish between other persons usually comes somewhat later. By the end of the fifth month, and increasingly thereafter, this ability to discriminate becomes more evident. At first, the child may simply show signs of his discrimination between familiar and unfamiliar faces. Later, his discrimination becomes even more refined, so that he not only recognizes familiar individual faces but also is able to recognize differences between strangers.

The development of this ability to discriminate may be accompanied by other forms of behavior which hitherto have not been exhibited, such as the first signs of timidity and shyness (Shirley, 50). Coincident with such signs of timidity may also appear the first signs of fear of strangers. In a study by Shirley, six of a group of twenty-five babies, whom the investigator had visited time and again from the first week of life, showed fear of the investigator for the first time during the latter part of the

fourth month or at the age of five or six months. A similar illustration of fear of people, coinciding with the development of signs of ability to discriminate between different persons, has been noted in studies of children's fears (Jersild and Holmes, 30). At the age of six months, one child cried in apparent fear for the first time when approached by a maid who differed notably in appearance from the rest of the members of the household. Up until this time the maid had attended the child almost daily, but apparently he had not been struck by the difference between her and other members of the household. In this phenomenon we have another illustration of the manner in which the mental, social, and emotional aspects of a child's development are interwoven with one another.

Timidity and fear of strangers does not invariably accompany the development of increased discrimination between other persons, and in many cases, when this response does occur, it does not appear as a distinct and sudden development but is part of a gradual and comprehensive increase in signs of social awareness. Further, when timidity does make its appearance at about the age of five to seven months, the symptoms frequently begin to wane within a short time. Unfamiliar voices and faces, which the child has since become able to distinguish, in time tend, if they recur, to recede into the realm of the familiar. We have here a situation somewhat similar to that which was noted in the paragraph above dealing with the development of the child's ability to discriminate between friendly and angry voices and expressions; the effect of the angry tone wore off in time, unless reinforced by further unpleasant experiences. If one were to follow the child throughout his subsequent career, one would find a repetition of phenomena of this kind. Through the combined effects of growth and learning, he comes to the threshold of a new discovery or a new experience, or reaches a stage of understanding at which he can appreciate new or different meanings in the circumstances that surround him. Each such new experience may give the child pause. If the event or discovery comes upon him

suddenly or overwhelms him, he may exhibit fear; but in the normal flow of the child's existence, more and more events lose their arresting qualities and are "laid by" as part of the accumulating total of familiar experience.

After the first half-year of life, there is, as one would expect, an increase in the number and complexity of social reactions. Between the age of six and ten months, babies learn to participate in social interplay in such activities as peek-a-boo, rock-a-bye, waving a bye-bye, yelling at adults, and begging for attention by means of squeals and grunts (50). In such activities, the child gives as well as takes.

Response to Other Children. At six months, a child is likely also to begin to take notice of another child of his own age, and during coming months, his interest in other children becomes more active. Before the age of one year, many children will exhibit varying reactions toward their peers, such as giving heed when another child cries, making active attempts to exclude another child from their sphere of activity, or babbling to other children to gain attention (2). It usually is not until considerably later that coöperative play with another child occurs.

In studies of early social behavior, a "baby-party" technique has been used in several studies. Two or more children are placed together in a more or less standardized situation, and their behavior toward one another is observed. In a study by Maudry and Nekula (36) in which pairs of children similar in age were placed together for periods of a few minutes at a time, the general trend of the findings indicated that, up to the age of nine months, children show relatively little social interchange or response to one another; from nine to fourteen months, the children continued to give more attention to their surroundings and the play materials that were provided than to one another, and their social interchanges included many negative responses; from fourteen to eighteen months, the children's behavior showed a gradual transition in the direction of more social response of a positive sort; and by the age of twenty-five months, their social responses

and interest in play materials became more closely integrated, and responses of a friendly and coöperative nature predominated over negative responses, such as efforts to push the other child aside. At this age children likewise may begin to be sensitive to being excluded from a group and may show distinct preferences for particular children. Individual children will, of course, differ from the trend just described.

At the beginning of the second year, instances of coöperative give and take between two or more children are not likely to be of long duration. When several children of this age occupy the same play space, they will, to be sure, take notice of one another, tend to congregate in the same locality a good deal of the time, seek to attract attention from one another, and make contacts with one another; and again and again, the activity of one child is likely to have an influence on what the other child does. A good part of the time, however, the children's activities will be parallel and adjacent—with occasional interchanges—rather than be merged into a joint, continuing activity. It should be noted in passing that, at this age, a child's "occupation span"—the length of uninterrupted time he spends at an activity—is likely to be brief, whether he plays with other children or alone (see Chapter XI).

Group Activities During Preschool Years. During the third year, there is an increase in coöperative play, and group activities become longer in duration (44, 53). The same trend continues from the fourth to the sixth years. With increasing age, there is an increase both in the size of the group with which a child will be in mutual contact and in the duration of the group projects. During the period from three to six years, there is also a decrease in completely solitary play on the part of children sharing the same playground. By the age of five or six years, children will sometimes play in groups as large as five or six members or more, but groups limited to about three members are preferred at the later nursery-school and kindergarten age (3, 11, 48, 52, 55).

In a study by Green (19), five-year-old children were observed to play with three or more children eighteen per cent of the time

and with two children twenty-two per cent of the time. Two-year-old children played with three or more children only two per cent of the time and with two children nine per cent of the time. Two-year-olds played alone sixty-two per cent of the time, while five-year-olds played alone thirty per cent of the time. Although this progress from relatively little social response through parallel play to more frequent participation with more and more children can be noted, these developments do not constitute clearly demarcated stages. A child may revert to earlier forms of non-participation as a result of problems that arise in his own private adjustment or his relationship to the group. He may be a participator in one group and an onlooker in another; he may return to solitary or hermitlike behavior if, as sometimes happens, he matures more rapidly than his associates or acquires special interests of his own, so that the activities of his former playmates no longer interest or challenge him. Furthermore, at any stage of growth, when a child encounters a new situation, his first tentative social responses may roughly reproduce the sequence noted in his early behavior before he feels at home with his new associates.

Later Trends in Group Behavior. The foregoing brief sketch has omitted many forms of behavior that will be considered separately in ensuing pages. It should also be noted that, at all stages of development, a child's social behavior is interwoven with other aspects of his development. An increase in ability to discriminate and to undertake more complex activities, an increase with age in the child's "occupation span," and improvements in his motor abilities parallel and form an integral part of the picture.

Any description of stages in the development of a child's group activity from one year to the next must necessarily be rough and tentative,¹ but we can note certain broad trends. At the age of six, a child's capacity for group formation is still quite limited. He is

¹C. Bühler, who, together with her students, has contributed many studies of the development of social behavior in infancy, has also given considerable attention to the social behavior of elementary-school children and adolescents. See her account of "The Social Behavior of Children," in *A Handbook of Child Psychology*, Ch. IX. See also Moreno (40), and Murphy, Murphy, and Newcomb (41).

beginning to show an interest in sports which require the participation of several children, but the games in which he joins are likely to be loosely organized games—such as tag (13)—and much of his play will involve make-believe dramatic themes that allow for a good deal of individual freedom. In their free activities in class or on the playground, first-grade children are not likely to operate as an organized group involving all members of a class of twenty or thirty children (unless their play involves a project directed by an adult). According to observations made by Reininger (45), at the first-grade level, the children who are leaders are likely to lead small groups rather than the entire class. It is not until about the fourth grade or later that a class is likely to act as a whole, united under a common leader, on a common project, originated and directed by the children themselves. However, it is not possible to set an exact time when children will reach this level of development, since their behavior will be influenced by many variables, such as past training and opportunity, the urgency or interest value of the project on which they are engaged, the presence of resourceful leaders, and the characteristics of the individual children who happen to be the members of a given group.¹

Children's out-of-school play activities afford an interesting opportunity for studying the development of group action and teamwork. In general, as children grow older, they exhibit an increased capacity for identifying themselves with the fortunes of a team or club and increased interest and ability in following complex rules of action. In their own activities, children come in time to establish quite complicated regulations as to procedure, the function and role of individual members, precedent in "taking turns," and the like. When children of a wide age range play together, they frequently will adapt their procedures to the varying

¹ In a series of informal observations of a number of classes during periods when the children were working as a parliamentary body under the leadership of officers elected by the children themselves, the writer noted that one second-grade class was particularly efficient in this type of group activity, although usually the fourth- and fifth-graders managed better than did the younger children.

degrees of capacity for teamwork exhibited; thus, while the ten-year-old boys in a ball game are expected to take regular positions on the field and to follow a definite order in batting, a six-year-old who may be playing with them is given a roving commission as back-stop for both teams, with freedom to drop in and out of the game, and he may even be indulged with an occasional irregular turn at bat. In a game of cops and robbers, the older child is expected to stay "dead" when he is shot until the rules of the game permit him to revive, while a younger child may be permitted to "peek" when he is supposed to be dead, and to interchange roles as the spirit moves him.

Although the social activities of children of school age represent a very interesting field for study, relatively little systematic research, based upon direct observation of children in action, has been devoted to such matters as the development of forms of social organization among children of school age, the manner in which roles are taken or assigned, and the ways in which regulations are adapted or devised to suit different circumstances.

Recognition of Own Status and the Characteristics of Others. Along with the development of the child's ability actively to participate in more complex social enterprises, there is an increase with age also in his perception of social relationships and in his awareness of his own status as compared with others. As noted in more detail at a later point, by the time a child reaches school age, he is likely to understand the meaning of competition and to appreciate, at least in some fields of his activity, his standing as compared with others. Many children of this age are capable also of a certain amount of self-criticism, on the basis of their appreciation of the standards set by others, and many of them also are sensitive to the possibility of ridicule, failure, and loss of prestige.

An important aspect of social behavior is the development of ability to be cognizant of others, to perceive that the other fellow perhaps has interests, desires, and fears similar to one's own. This aspect of social development is difficult to study, since the child is likely to have difficulty in formulating in so many words his con-

cept of the other fellow; his ideas and perceptions can not be fully understood simply by noting isolated acts in his overt dealings with others.

During the elementary-school years, children also become increasingly able to formulate in words the traits and characteristics of others which they like or dislike. In a study in which children were asked, among other things, to describe what they disliked in the world about them, an increasing percentage of children from the age of five and upward named people or undesirable traits in people. Six per cent of the answers at five to six years, and twenty-two per cent at eleven to twelve, fell into this category (32). The percentages would, of course, have been considerably larger if the children had been questioned specifically about their reactions to other people.

THE PROBLEM OF WHAT IS NATURAL, WHAT ACQUIRED

One general question deserves brief consideration: To what extent are social responses such as those described above due to learning and "conditioning" and to what extent do they emerge "naturally," apart from specific "conditioning"? By way of analogy, the question can be raised: To what extent does the development of various aspects of social behavior correspond to the development of walking, for example, which, as noted earlier, appears to emerge "naturally" and is not influenced to a considerable degree by training and "conditioning"?

It is impossible even at best, in analyzing human behavior, to isolate what is due to original nature and what is due to learning and experience; but it would be possible to cite many arguments, supplemented by neat diagrams, in support of the view that the various forms of social behavior are specific ways of behaving that have been learned and are not intrinsic to the nature of the child, just as it would be possible to argue the opposing point of view. As noted above, Bühler reported that the babies in her study began, at about the age of six weeks, to respond differently to the human voice and gaze than to other noises and visible ob-

jects. The babies smiled. Bühler recognizes that this smile may possibly be a "conditioned reflex transferred from the situation of satiety to the human being present at the moment"; but she also points out that adults are present in many other situations, comforting as well as painful, in which satiety is not a factor, and she considers it more likely that the smile is an "original and primary reaction to the human voice and look" (3, page 377). Observations made by Dennis (10) in an experiment with a pair of infant twins are interesting in this connection. As mentioned in an earlier chapter, until the age of seven months, these twins were kept in a very restricted environment. Among other things, no one smiled to them or cuddled, fondled, or played with them; but when they reached the age when babies usually begin to smile to adults, these babies smiled. When they reached the age when babies usually laugh, they laughed, and they also gave signs of affection for their stolid attendants. Such observations do not, of course, prove that this behavior is instinctive, but they do indicate that responses of this kind can come to the fore with a minimum of stimulation from other persons. On the basis of continuing observations and tests of infants during the first two years of life, Shirley is of the opinion that social behavior, in all likelihood, has its own sequence just as truly as does motor development, and that certain manifestations of shyness and self-consciousness during the second year of life appeared so consistently as to suggest that they did not spring from environmental influences alone but represented a normal manifestation of growth (50).

Observations such as these do not, of course, imply that various types of social response spring forth full-fledged, apart from environmental influences. Without a social environment, there obviously could be no social behavior. Moreover, even if some forms of social behavior are looked upon as having a "natural" sequence of their own (which, incidentally might carry with it also the likelihood that different children would "by nature" differ in the strength of their tendencies to be sociable, friendly, sympathetic, competitive, combative, and so on), it still is obvious that

environmental influences play an important role in determining the manner in which the child will respond to his fellows and the habits he will form. This point will be emphasized in the ensuing discussion of various aspects of social behavior.

SOCIAL PERCEPTION

The ability during the first year of life to discriminate between different facial expressions, as noted above, undergoes further development as the child grows older. In a study by Gates (15, 16), children ranging in age from three to fourteen years were shown photographs of an actress whose facial expressions were designed to show joy, anger, surprise, fear, scorn, and pain. Adults are usually able to identify the expressions which these pictures are intended to show. At the kindergarten level, laughter was correctly named by over seventy per cent of the children; but pain, anger, and fear were recognized by less than half. None of the children of kindergarten age understood the pictures of surprise and scorn. More than half of the children could identify anger at the age of seven, fear at ten, and surprise at eleven. In daily life, with living faces before them, most of these children undoubtedly recognized these expressions a good deal earlier than they were able to recognize the expression in a photograph of a stranger, but it is nonetheless instructive to note how far the child lags behind the adult in recognizing conventional signs.

SHYNESS AND FEAR OF OTHERS

Mention has already been made of the appearance of timidity in many infants at about the age of six months. In Shirley's detailed observations of twenty-five babies during the first two years of life, two stages of social timidity were observed: timidity which developed in the fifth and sixth months, and shyness which appeared late in the second year (50, pages 84-90). This outcropping of shyness and embarrassment late in the second year (beginning at about eighteen months) appeared quite constantly. Shirley states that this lack of social poise seems to be associated

with the child's language development. He is making strides in language development but is still unable effectively to express his ideas and emotions in words. His timidity seems to be associated with increased self-consciousness and self-awareness. Shirley reports that this apparent self-consciousness and embarrassment was one of the most impressive features noted in her study.

Detailed studies are not available on the subject of manifestations of shyness during later years. From everyday observation, we note the children vary considerably in this respect after the age of two, and throughout life.

Many children, some earlier than others, exhibit fear of strangers and unfamiliar features in persons throughout the preschool years and, to a lesser extent, on into elementary-school years. Examples of such fears, as noted in one study (30), included fears exhibited when the child first was taken to a barber or when a tradesman came to the house. Sometimes a child will shrink and cling to his mother simply when seeing someone on the street. Several children also exhibited fears classified as "unfamiliar features associated with familiar persons." Thus one child showed extreme fright the first time she saw her mother with a thick layer of cold cream on her face; another was afraid when, for the first time, she saw her grandmother with her hair down. There were instances, likewise, of fear of familiar persons wearing bandages, and a few children were reported as shrinking in fear when seeing cripples or deformed persons.

With the passage of time, fears of this sort also tend to recede, although many children, well into elementary-school years, continue to be afraid of individual people because of lurid tales they have heard about them or because of peculiar characteristics of their appearance, voice, and manner. Some children acquire fear of other children, especially those with whom they have had unpleasant experiences. Even when fear of persons in the everyday environment have receded, there develops, in many children, fear of remote and imaginary persons, such as robbers, burglars, kidnappers, and "bad guys" in general.

Many children also acquire fear of ridicule, humiliation in the eyes of others, and loss of prestige. Among the many factors that contribute to such fears is the development of the child's own capacity for self-criticism and his own changing standards as to what he expects of himself or thinks others expect of him. Although individuals differ decidedly in this respect, a great many children, as well as adults, never fully succeed in "laying by" uneasiness and fears of this sort. A child who is quite at ease in one situation may become shy and even anxious in another, even though his "natural" way of doing things would be quite as effective in the new situation as in the old. Again, even within the same general setting, a child may conduct himself with aplomb at one age level and then become tense and self-conscious at a later time, as when he gets up before the class and declaims with calm assurance at the age of six or eight years and then, at the time of puberty, shrinks from speaking in public and trembles when he does so.

RESISTANCE

"Resistant" or "negativistic" behavior occurs so commonly in children that it may be regarded as a normal feature of the child's social development. Signs of resistance, such as the stiffening of the limbs or extreme limpness, can be observed when a child is only a few months old. As usually employed, "resistance" denotes opposition to adult authority and wishes or aggressions against adults or anyone who is vested with authority or is trying to influence or direct a child's conduct. Resistance to other children overlaps with aggressiveness and the child's conflicts in his relations with other children. As the child grows older, the ways in which opposition to others may be displayed and the situations in which it may occur become more numerous. In many children, resistance begins to become most noticeable, roughly, at about eighteen months, with a peak at about the age of three and decline in overt manifestations at about the age of four.

In the young child, resistance frequently takes the form of fail-

ure to comply with apparently understood requests, in stubbornness in matters of eating and the daily routine, and in countless little acts of disobedience. Children sometimes may carry their resistance to the extreme of refusing to urinate until they no longer can retain themselves, forced vomiting, refusal to take food or to swallow, efforts to hold the breath until blue in the face. The phenomenon may also take the form of bickering and argumentativeness. An example of this appeared in the case of a two-and-a-half-year-old child who, for some reason, had become extremely disputatious. At one time, his father was telling this boy and two other children about a chicken farm once owned by the boy's grandfather. Some of the chickens on this farm, the father related, were black and some were white. The boy interrupted to say: "Naw, they were not black and white, they were blue." This form of bickering, after a short time, disappeared almost as suddenly as it came. In a case such as this there undoubtedly were many factors contributing to the resistant behavior, but it appeared that the child's behavior represented in part, at least, a form of experimentation which coincided with a newly acquired ability to question others and to voice private opinions.

In a study by Reynolds (46), negativism in children was approached from several angles. Children were rated by their parents and by nursery-school teachers and were also observed under experimental conditions. Over two hundred children, aged from two to five-and-a-half years, were studied. Negativism was defined as refusal to comply with understood requests. Records were taken of the child's response when asked to repeat numbers, when commanded to stop playing with blocks, when lifted into the experimenter's lap, when neglected, and at other times. These experimental situations afforded thirteen opportunities to be resistant. The average child had a resistance score of 4.38, but wide differences between children were observed, the resistance scores ranging from 0 to 12.

This study illustrates the fact that what is called "negativism" may appear in one situation and not in another; there was no sig-

nificant resemblance between the negativism scores in the experimental situations and the parents' and teachers' ratings of the same children. The older children, incidentally, were less resistant than the younger, although there were many exceptions to the rule. The decline in resistance with age takes place partly because the older child understands better what is expected of him, is better able to comply, and has learned that he will be more comfortable if he complies with the wishes of others, and also because he has learned to express himself better by means of words and has acquired other more subtle means of asserting his independence; in many instances, adults and older children have also learned how to avoid courting resistance or how to circumvent it.

Resistance is frequently encountered when intelligence tests are being administered to young children. In a study by Rust (47) of resistance during mental tests, one hundred three-year-old children were tested on two standard scales (Kuhlmann-Binet and Merrill-Palmer). On the first day, approximately half of each scale was administered, and on a following day the next half was given. On the third and fourth days, this procedure was repeated, so that each child was tested twice on both scales. Instances of resistance (as distinguished from failure in efforts to perform) were noted. On the first tests, eighty-four of the one hundred children resisted one or more test items (by spoken refusal, physical protests, silence, and so forth), but there remained only *four* children who continued to resist one or more items of the test at the end of the experiment. This decline in resistance, as the children and the examiner became better acquainted, is in itself of interest; however, this degree of success in overcoming resistance cannot be regarded as standard, since adults differ in their ability to establish rapport and to gain a young child's coöperation.

Examination of the records showed that a child would frequently resist because he is unable to do what was asked. This one would expect. But the interesting fact is that about fifty-eight per cent of the test items initially refused by the children were passed successfully on subsequent presentations, even though

the children received no further help. The chief cause of resistance, accordingly, was not the difficulty of what the child was asked to do but rather that the items of the test did not fully enlist the child's interest and effort. The histories of the four children who were still resistant on the final test (reported in unpublished data by Rust) are revealing; in the case of each child, there was evidence of unfavorable home conditions, such as friction between parents and emotional maladjustment.

Some Contributing Factors. Many conditions impel a child to become resistant. He is likely to resist in time if he is often needlessly interfered with, if he is jerked or forced abruptly while already trying to obey a command, if he is frequently caressed and fondled against his wishes, or if he is frequently teased or given contradictory commands. His efforts to protest or to protect himself in specific instances are likely to become habitual if he is often provoked. Moreover, if he meets the same person or similar advances in many specific situations, he may come to resist this person and such advances in other situations as well.

Resistant behavior is sometimes an outgrowth of the fact that people who associate with young children do not take proper account of the child's limited capacity for concentration. In playing with a child, adults often are tempted to overdo their attentions. If a child is just beginning to talk, for example, it is fascinating to try to coax him to repeat words or to speak new words. Yet such attentions may soon become quite tedious and even burdensome to the youngster. When a child's energies are taxed, his resistance becomes merely a means of self-protection. In somewhat similar fashion, the child may be driven to remonstrate against demands with which he does not have the ability to comply. Sometimes resistance may represent both a protest and a bid for attention, as when a child who is left to care for himself while his mother is attending to a younger brother or sister dawdles, procrastinates, or demands help in what he actually is able to do for himself.

Later Symptoms. Although resistance usually declines after the

fourth year, it persists in one form or another throughout later years. As the child grows older, his methods of resisting are likely to become more subtle. The child may pretend at a later age that he does not hear or understand, may stubbornly refuse to see the point, persist in referring to a topic that has been closed, make repeated complaints, assume a careless manner in executing commands, tease, resort to indirect recriminations, or employ other devices that are used by stubborn and "headstrong" people. Resistant tendencies resembling those of children may sometimes be found even in otherwise normal adults, as when an adult chronically "rises" against suggestions, goes out of his way to eat or to wear what he has been advised against, or persists in mannerisms for no apparent reason other than the fact that he has been urged not to indulge in them. A tendency to be resistant may thus persist as a habit residual, so to speak, during later years and one can sometimes find instances of rather childish resistance in adults. In this respect, resistance is not unlike other forms of behavior which are normal and appropriate to a given level of development, but which may fail to recede as the child matures, and persist into adult life. Frequently an adult shows curious aspects of behavior that cannot be understood except in terms of their origin and development in childhood.

CHILDREN'S FIGHTS AND QUARRELS

As soon as children are old enough to fraternize with one another, bickerings and altercations of one sort or another are common in their group behavior.¹ As the child makes his way among his peers, entering now into this activity, now into that, his desires may clash with those of others; he may bump into another, get into another's way, interfere with another, or enter where he is not wanted, and brief arguments or more vigorous physical encoun-

¹ For detailed studies of children's conflicts with one another, see Burk (4), Caille (5), Dawe (9), Fite (12), Green (18), Isaacs (25), Jersild and Fite (29), and Jersild and Markey (31).

ters ensue. Studies of children's conflicts indicate that the number of such altercations a child enters into is correlated, to a high degree, with his general activity; the more a child "gets around" and the more contacts he makes, the more he is likely to enter into a larger number of altercations as well as other forms of behavior. That a large number of conflicts grow out of the general flow of a child's activity is set forth by Green, who observed that quarrels are likely to be more frequent among children who are close companions (18). Green found that "mutual friends are more quarrelsome, and mutual quarrelers are more friendly than the average," and that "quarreling is a part of friendly, social intercourse at these ages." In other studies, likewise, it has been found that there is a positive correlation between aggressive and sympathetic behavior, although, of course, there are notable exceptions to this trend.

Varying Functions and Motives. Aggressiveness is not a function only of the general flow of a child's activity. His aggression against another child may serve many purposes. Not only may the motive be different in different children, but it may differ within the same child from time to time; and sometimes a child's contact with another will combine both an aggressive and a friendly act, as when he pushes a child down and then helps him to his feet. In the conflicts of children of preschool age, especially before ideas of property rights and inhibitions clustering around these have been fully formed, a good deal of a child's verbal argumentation and his hitting, pushing, and pulling are in the interest of procuring or protecting play material or activities. Aggressive behavior may also serve either as a means of winning one's way into a group, of bringing oneself to the attention of another, or of rebuffing the advances of another. Again, a child will sometimes block another, interfere with his activities, and even take a tentative poke at him not, as far as can be ascertained, because of any animus or ulterior desire for conquest or possession, but more in the interest of experimenting to see what will happen. Again, children

will sometimes blunder into a fracas with no initial intention, as far as can be ascertained, either of stirring up a fight or of gaining anything in particular by it.

In the behavior of children from two years and upward, aggressive behavior is not confined, however, to chance collisions or momentary clashes of interest. A child's aggressiveness may, for example, appear to be an expression of jealousy, as when he goes out of his way to irritate, tease, or hit another child who has received attentions from adults or other children. Further, even though most of the altercations between young children are brief in duration, a child may return again and again to attack another, as though moved by a lingering resentment; sometimes, likewise, a child will repeatedly do something that irritates another, as though seeking to provoke an attack so that he, in turn, may "defend" himself by a strong counterattack. Sometimes it is the child who is least sure of himself in his relations with his group who is the most belligerent.

The manner in which combativeness may function in the behavior of the individual child may be illustrated by the records of two children who were members of a nursery-school group that was observed (29). Both children showed a notable increase in the frequency of their conflicts during the course of the school year. One of the children was a boy, who, at the beginning of the school year, spent much of his time with a companion whom he dominated; but with the help of the teachers, the dominated child established ties with other children. When the boy found that his hold over his companion had been broken, he tried to establish other contacts; but partly because of his aggressive techniques and small size, he met rebuffs from other children whom he tried to join. At his approach, they would tell him to go away; he would then tell them to shut up and they would tell him to shut up, he would hit and they would hit, and thus there was an increase in the frequency of his conflicts. This increase was, in effect, a symptom of maladjustment in the child's social relations.

The other child who also showed a conspicuous increase in fre-

quency of conflicts was a girl, who, at the beginning of the year, was dominated to a large extent by a playmate of about her own age. As the weeks went by, this girl became more and more sociable in her relations with other children on the playground, but as this happened, she had to fight off her dominating companion. In this case, an increase in conflicts was, in effect, associated with an improvement in the child's social adjustment within the group as a whole. In both of these foregoing cases, factors contributing to combativeness and the role of children's aggressiveness were quite apparent, although, of course, a complete study of the life history of these children would show that many other factors were involved.

One factor, among many, which helps to accentuate a child's aggressiveness is the example set by other children and adults. Frequently, no doubt, an adult's treatment of a child strikes the child as a form of aggression, even though the adult is not conscious of being aggressive.¹ For example, when an older child refuses to yield his toy to a younger sibling and is then compelled to yield by his mother, the mother's intervention, as far as the older child is concerned, may not differ materially from the child's own behavior when he, in his own way, snatches another child's material. Adult "aggressions" of this sort are, of course, more or less inevitable in the day-to-day business of rearing children. The situation is different, however, if adults stimulate aggressiveness by teasing and efforts to get a "rise."

Conflicts of Nursery-School Children. In a study of children's conflicts with one another, children in three nursery schools were observed during the course of the year, and a number of them were reobserved the following year in nursery schools and kindergartens. The conflicts that were noted ranged from brief verbal disputes to fights of a more violent character, involving biting, hitting, pushing, scratching, and the like. A conflict was defined as "any instance in which one child attacks another's person or ma-

¹In one study it was observed that young children would sometimes use hugging and kissing as a form of attack (31).

terials or by word or deed interferes with the person, activities, or possessions of another, or threatens by word or gesture to do so, or endeavors by force or verbal demands to possess another's belongings, or to direct another's activities in opposition to the apparent desires of the other child."

During the first year of the study, the fifty-four two- to four-year-old children who were observed exhibited an average of one conflict per child every five minutes, but most of these conflicts were very brief (lasting less than half a minute). At one extreme was a child who engaged in 141 conflicts during the course of the observations, while at the other extreme a child who took part in only 17; one child made a personal attack on another (hitting, pushing, throwing things at, holding, threatening gestures, and so forth) 87 times, while there was another child who did not hit a single time. The frequency of conflicts tended to decline with age (from two to four years), but this trend was not conclusive. The most notable change that occurred at this age was in the techniques used during conflicts. From the age of two to four years, there was a decline in screaming, weeping, and cries for help; there was a decline also in hitting and other forms of physical attack and an increase in the use of language during conflicts.

Sex and Group Differences. In the study mentioned above, it was found that the younger the children, the more similar boys and girls were likely to be. At two years, for example, boys and girls were quite similar in the frequency of their screaming and crying. But with added age, the girls did not exhibit as large a decrease in screaming and weeping as did the boys; boys tended to hit more frequently than did the girls and also tended to be aggressive more often than girls and to "win" more altercations.

Large group differences also appeared. Children in a day nursery, representing a somewhat unprivileged economic and educational background, exhibited more conflicts than did children in a nursery school that enrolled children who came from a relatively superior social and educational background.

Adult Responses to Children's Conflicts. In about a third of the children's conflicts in this study, the teachers took steps to stop or settle the disputes. In a majority of such instances, the teachers decided the issue against the children who were most aggressive and who "won" a high proportion of their conflicts when left to themselves. Frequently this was justified, but such favoritism toward the less aggressive child sometimes went so far as to leave him the winner in a dispute in which the right seemed to be on the other side, so that the aggressor had reason to feel that an injustice was done, and the nonaggressive child apparently was encouraged to depend upon adult help. It has also been noted that an adult coming upon a fracas between children, without having observed the situation out of which the difficulty arose, may fail to take proper account of the underlying issue (13). By way of a simple example, two children may be engaged in a tug of war over a small box. On the surface, it seems that only the box is at stake and that a reasonable solution can readily be found; actually, however, the struggle for the box may be only incidental to an effort by one of the combatants to taunt or tease or humiliate the other.

Interesting after-effects appeared in connection with this matter of teacher interference when comparisons were made between two groups of children of approximately similar age; in one group, there was not only more active and frequent interference on the part of the teachers than was the case in the other group but there also was more passive interference, by virtue of the fact that there usually were three or four teachers in charge, as compared with only one or two in the other group. During the year when these conditions prevailed, the much-interfered-with children fought less often than did the children who had more freedom. But the following year, when children from both groups moved on to two respective kindergartens, in both of which the teachers interfered relatively little with the children, a different turn of events appeared. The previously little-fighting and much-interfered-with children doubled the frequency of their conflicts. On the other hand, the previously little-interfered-with and much-

fighting children, instead of fighting even more when allowed a greater degree of freedom, actually did slightly less fighting than during the preceding year.

Conflicts of Older Children. One sometimes can observe, especially toward the end of preschool years, and more especially with the beginning of the school-age period, an interest in fighting as a sport. Some boys will even assert, with pride and with a smile, that they "like to fight," and one of the things many boys will claim when asked how boys differ from girls is that "boys fight, but girls don't fight much." Even in many seemingly playful combats, to be sure, there is likely to be more than a sheer sporting interest. A certain amount of animus and a good deal of self-assertiveness frequently enters in. Anger may rapidly mount on both sides, even if the bout began on a rather friendly basis. Fighting of this sort may spring from many motives, including underlying maladjustment, but it also is part of a child's experimentation in social living; it is a means whereby he tests his powers and explores his status within his group. Completely to deny a child a chance to take part in combats of this sort, especially if he has the inclination and there seems to be no great danger involved, is to interfere with a part of the learning process in social development.

In school situations, unless conditions are exceptional, there usually will be fewer altercations in the elementary grades than in nursery school or kindergarten, partly by reason of the fact that older children are usually working on supervised projects while school is in session. Where enough freedom prevails, children will attack each other in the classroom on occasion, frequently in a spirit of mischief or fun, rather than in a spirit of genuine hostility. Hostility oftentimes finds expression in the criticisms children make of one another's work at school. In observations of elementary school children, McKinnon (38) found that hostile criticisms occurred quite frequently, although considerably less frequently than "neutral" or friendly comments and contacts. It frequently happens that critical comments and hostile reactions

will be directed especially toward one or two members of the class whose behavior is annoying. An instance of this is shown in McKinnon's records. Several children commented critically about the drawing of a somewhat aggressive member of the class, and, as the criticisms multiplied, the child against whom they were directed flushed and yelled with anger and finally cried in helpless rage. Occasionally a child, and even a whole group of children, may express its hostility eloquently and effectively simply by ignoring a child who exhibits his work or otherwise bids for attention. As noted elsewhere, in observations of small groups of children, Lewin, Lippitt, and White (34) noted that aggressiveness in the relations of children may be intensified by the restraints imposed by adults who supervise them.

More difficult to study are the altercations that occur during children's play and unsupervised school activities. From ordinary observation, it can be noted that children differ decidedly, not only in their tendency to enter into fights, but also in their reaction to attacks by others. Frequently in groups of children who have known each other for some time, the members of the group come to recognize a more or less clearly established hierarchy of dominance, with a child at one extreme whom all of the children, by mutual consent or through bitter experience, look upon as the best fighter and who had better be left alone, and at the other extreme a noncombative child whom no one fears, while other youngsters occupy positions between these extremes. In their own way, children frequently build up many unwritten rules of combat. Certain methods of attack, such as throwing stones or using icy snowballs, are frowned upon; a child should "pick on" someone his own size; certain tactics are permitted in fights between boys but may not be used when a boy fights a girl (although this rule frequently breaks down at home in fights between brothers and sisters); hostilities between members of a group must be buried when the group is attacked by another gang; and so forth.

Sometimes children who cannot win in open combat will resort to furtive or indirect means of attack, such as throwing snow-

balls from a hidden post, laughing at the discomfiture of another, tattling, promoting strife, and the like.

Aggressions may become quite cruel, especially when several children band together against a single child or a minority group. Frequently, children's cruelty and intolerance may arise through lack of understanding. An elementary-school class, at Christmas, presented a corsage to the teacher with a note: "From all of the class, except Bill." It was discovered that poor Bill, who was thus pointedly condemned, had the will but not the pennies to contribute; some of the other pupils, similarly poor, had borrowed money from the very teacher to whom the gift was presented, but Bill refused to do this. Most adults would regard his stand as quite admirable, but it is unlikely that this fact would remove the sting of being censured by his own classmates.

Teasing and Bullying. Beginning early in preschool years and extending throughout childhood, children use a large variety of aggressive techniques that fall short of physical combat. Efforts to "get the other fellow's goat" can be seen in the relations of children in the same family who goad each other to anger but dare not openly hit, or by children in class who make faces and imitate the sounds or expressions of others in an endeavor to be irritating. Teasing and opprobrious nicknames are frequently used as a technique in children's efforts to discipline one another.

Occasionally a child will join others in teasing someone, even though he bears him no ill will but is simply following the crowd. Frequently, however, there is genuine animus behind teasing, and the child who is inclined to tease is often a child who is giving expression to tensions and problems in his own social relations with others. An interesting sequence in behavior of this kind in a summer camp is described by Osborne (43). When first introduced into the camp, a child was the butt of much teasing and bullying, partly because of certain "babyish" traits. As he continued in camp, he mended his ways; but during the transition, as he was in the process of becoming adjusted to the group, he went through a stage when he in turn teased and bullied other

children. As time went on and as the child's poise and adjustment in the group improved, he abandoned teasing and bullying. In observations of preschool children, Murphy (42) has also noted that teasing may be an expression of insecurity.

Disguised Aggressiveness. In discussions of aggressiveness in children (and in adults), one is most likely to consider the everyday signs of contentiousness and hostility. However, the aggressiveness of a person who is relatively "natural" and uninhibited is frequently overestimated, in comparison with the aggressiveness of other persons who may seem to be the soul of friendliness. Deep hostility may be expressed by an individual who never lifts his voice or raises his hand to strike but who has acquired the technique of eloquent silence, or of pointedly ignoring others, or of persistent argumentation of an apparently disinterested and very tolerant sort. A skillful antagonist may even use a crusade of apparent good will as a means of attack upon individuals or groups.

SYMPATHY

Expressions of sympathy in young children can be observed in acts such as helping, removing or attempting to remove causes of distress, comforting, punishing the cause of distress, protecting and defending the distressed person, warning, telling an adult or some other child about another's distress, questioning to discover the cause of distress, suggesting or effecting a solution, and anxious or disorganized responses, such as, staring with an anxious expression, evidences of worry, head shaking, frowning, compression of lips, and crying and whimpering (Murphy, 42).

It has been observed that children of two and three years of age do not tend, in general, to respond sympathetically to stimuli such as black and blue wounds, swellings, lumps, and other minor distortions of flesh which to an adult would suggest discomfort or illness, or to the account of Red Riding Hood being eaten by the wolf, or pictures of accidents, of funerals, of someone crippled or carrying crutches, and the like (42). Younger children ap-

parently have not, in general, acquired the level of discrimination and perception to recognize these phenomena as signs of distress. A child of this age might, for example, recognize conspicuous bandages or the flow of blood as a sign of distress, but fail so to recognize a blue bruise or swelling. Murphy observed that three-year-olds generally but not universally would respond to distress as indicated by bandages, blindness, bruises colored with iodine, red swellings, scars, scratches; by deprivation of toys, food, or of mother; by a physical dilemma such as being caught in a pen; by interference of activity suffered by a child who has to stay in bed or is not able to run or play; by frustration of activity; by being attacked by another person; by incompetence to do a job that is undertaken; by evidences of an accident, such as falling; and by crying.

Sympathy in the Social Relations of Young Children. Definite expressions of sympathy tend to be relatively infrequent in the behavior of young children, but over a period of time many such expressions can be noted. In an analysis of verbatim language records, representing 216 hours of observation of seventy children, with a median age of 38.5 months, 169 episodes of sympathetic behavior were noted (Murphy, 42). These episodes were exhibited by fifty-two of the seventy children; in the case of eighteen children for whom three-hour records were available, no instances of sympathetic behavior were noted. For the group as a whole, the data indicated that sympathetic episodes occurred at about the rate of one per hour per child. However, since these episodes represent only such expressions as were clearly revealed in the children's language and overt behavior, and do not take account of the more subjective and less discernible responses, the results here cannot be regarded as definitive concerning the extent to which sympathy occurs in the group behavior of young children. As far as the records go, however, they indicate that distinct expressions of sympathy occur less frequently than does aggressive behavior. As noted elsewhere, a study of the conflicts of children in groups comparable to those observed in Murphy's

investigation indicated that conflicts occurred at the rate of about one every five to eight minutes.

Murphy also observed groups of children explicitly for the purpose of noting expressions of sympathetic and unsympathetic behavior. The number of hours of observation in each of two of the groups and the number of sympathetic and unsympathetic responses that were recorded are summarized below:

	<i>Hours of Observation</i>	<i>Number of Sympathetic Responses</i>	<i>Number of Unsympathetic Responses</i>
Group W.....	188	318	195
Group H.....	234	398	60

The children in Group H represented a wider age range and higher average age and had a larger playground than the children in Group W. The ratio of sympathetic to unsympathetic responses, initiated and received, varied considerably from child to child. Older children tended to show sympathy more frequently than younger children; they responded to a wider range of distress situations and, as noted above, they were more likely than the younger ones to exhibit active responses of comfort, help, and defense, as distinguished from more passive responses, such as anxiously staring or asking about the distress of another. However, within a given age group, factors in the personality of the individual children were more important than the factor of age alone; likewise, although the factor of intelligence appeared to contribute to the quality of sympathetic responses and to the insight which a child might have into the distress of another, the factor of intelligence was less influential than other factors, such as a child's social interests and responsiveness to other children.

In connection with this matter of the frequency of expressions of sympathy, observations by McFarland (37) of children in the nursery school as well as in home situations are of interest. McFarland found that sympathetic responses by one sister toward another in the home environment occurred with almost the same frequency as did sympathetic responses on the part of a nursery-

school child to other children in the group, even though in the home situation there was only one other person whose distress might arouse sympathy, while in the nursery school there were many other such persons.

When the children in Murphy's study were rated with respect to sympathy and aggressiveness, the scores showed a positive relationship; in other words, the children who most often sympathized tended also most often to be aggressive. There were notable exceptions to this trend, however; one child, for example, stood near the bottom in his tendency to be sympathetic and near the top in his tendency to be aggressive.

Influence of Varying Motives on Sympathetic Behavior. Sympathetic or unsympathetic responses may vary considerably within the same child from time to time. For example, a child might be quick with his sympathies when he comes upon a situation in which another child is in distress, but show just the opposite response if the distress and wishes of the other child are in conflict with his own desires. Again, if a child's initial effort to be sympathetic is frustrated, he may become aggressive and change rapidly from a friendly to a hostile response, just as in everyday life a child will frequently show anger toward a wounded or hungry animal which at first aroused his compassion but ran away from the child's proffer of food or help. Furthermore, one child may be most sympathetic when he himself is somewhat afraid and insecure, and then grow less sympathetic as he gains in confidence; while another child may show the reverse tendency. Also, as a child becomes more at ease in the group, there may be an increase both in his aggressiveness and in his readiness to show sympathy. One child, while in the position of trying to win favor with his fellows, may be more sensitive to their needs, not only because of his wish to please them, but also because of his tendency to see his own anxieties reflected in others. Another child, also insecure in his relations with the group, may be so wrapped up in his own problems that the distress of others fails to register with him.

Variations in response also appeared in connection with experimental situations that were used to precipitate a sympathetic response. In one such situation, the procedure was to leave the child alone at the side of a play pen in which a two-year-old baby girl was confined. If the subject did nothing, the experimenter would ask questions such as: "She hasn't got any of her things, has she?" "What do you think she wants?" The experimenter later started to pull out the child, behaved as though she had difficulty in doing so, waited ten seconds for help, and then asked for help. The responses of different children to this situation varied from complete inaction to immediate and wholehearted responses that indicated concern over the predicament of the little child. There was little relationship, however, between the children's responses in this situation and the responses of the same children in their contacts with one another on the playground.

In another experiment, a girl less than two years old was left in the sand box by her nurse, seated on a wooden block, and in a short time the block was tipped so that the child received a slight bump in the sand and cried. Other situations involved giving the child a flower and asking him if he wanted to tear it up; showing the child a jar containing a fish, telling him that if the fish is taken out of the water it will die, and then asking him if the fish should be taken out; showing the child a mouse and asking him if he wanted the experimenter to give the mouse to the guinea pig to eat; showing the child a rat which was held in the experimenter's hand and asking him if he wanted to pull the rat's tail or whether he wanted the experimenter to pull its tail; telling the child a story about a dog which barked and cried when a boy picked up a stick and hit it on the street and about a big boy who came along and who took the stick away from the little boy and hit the little boy, and then asking the child if it was all right for the big boy to hit the little boy or for the little boy to hit the dog. When these situations and others were presented to eighteen children, five of them were quite consistently unsympathetic. One of these five was suffering from emotional difficulties; two had lower

intelligence than the group as a whole and two exhibited personality problems, especially in their relations with adults. Seven of the children were relatively consistently sympathetic, and six of them fluctuated between definitely sympathetic and definitely unsympathetic responses.

Among other things, Murphy describes three children who were observed over a period of several years. At the age of two, they were quite unaggressive and rather consistently sympathetic, but each of them developed marked aggressiveness under different circumstances and at somewhat different ages. One of them, for example, became aggressive at the age of four, and among the factors that seemed to contribute were an increase in his physical competence, competition from a younger sister, the influence of bullying older boys, and the influence of children's stories in which aggressiveness is stressed (as in *Little Red Riding Hood*). Murphy ventures the statement that, "apparently, in our culture, the chances are ten to one that a child who appears to show a constitutional gentleness will get over it, unless a combination of repressive forces in his environment acts with unusual consistency" (pages 269-270). She is of the opinion that aggressive and competitive patterns are deeply rooted in our culture and are universally experienced by children who are exposed to the teasing of bigger children, the nagging or other expression of adult aggression through authority and the goryness of so much child literature.

In observations of pairs of sisters, McFarland noted that a child's tendency to sympathize with another child depended not upon the degree of distress shown by a sufferer, but upon the child's relation to this distress. For example, if one child's distress jeopardized the security or interests of another, the sympathetic response was frequently inhibited. Likewise, a child would sympathize with her sister when the sister herself had gotten into trouble or when her distress was caused by someone else, but would fail to sympathize when she herself was the cause of distress. McFarland noted also that children who were very respon-

sive to the distress of their sisters tended also to be sympathetic toward others who were in distress; this observation suggests that, from the point of view of the education of a child's sympathies, sympathy, like charity, might well begin at home.

A many-sided systematic study, such as is represented by Murphy's investigation, has not been made of sympathetic behavior in older children and adults, but some material on the subject appears in treatments of other topics, such as children's friendships, coöperation, and affectionate behavior.

"SELF-CENTERED" AND "OTHER-CENTERED" BEHAVIOR

In the foregoing account, as well as in what follows, it will be seen that a normal child runs through the whole gamut of social responses, both "positive" and "negative." He fights, but he also is sympathetic on occasion; he snatches, but he also shares; he competes, but he also coöperates; he becomes angry and vindictive, but he also shows affection and loyalty and helpfulness; he is hostile at times, but much more often is he friendly or at least neutral. Such is the flow of normal experience; such is life, both in the case of children and adults. To be sure, individuals differ decidedly in the balance they maintain between the more benign and the more malign forms of behavior. At one extreme, we may find a person who seems predominantly callous or contentious; at the other, a person who seems quite the reverse. Because of the fact that conflicts, resistance, and other "negative" forms of behavior frequently are more dramatic and noticeable, we sometimes are inclined to look upon such conduct as being more "natural" than the more friendly and coöperative forms of behavior; but, as will be noted later, the average child is likely to lean considerably more to the coöperative and friendly side than in the opposite direction.

The manner in which various forms of behavior—such as rivalry and coöperation, hitting and helping, snatching and sharing, unconcern and expressions of sympathy, hostility and friendship—appear in the normal flow of children's relations with one another

is shown in an interesting study by McFarland (37), who observed the behavior of sisters in the home environment over a period of time and, by way of supplementary study, introduced experimental factors into the play situation, interviewed parents, observed some children in situations outside the home, and so on.

The fact that a child at one time is aggressive and at other times is affectionate and friendly does not at all imply that he is torn by chronic, conflicting tendencies to love and to hate, although such incompatible or "ambivalent" dispositions can, to be sure, be found in individual cases.

COMPETITION AND COÖPERATION

Coöperation and competition have many elements in common, and activities which outwardly appear to be competitive or co-operative may have different and quite mixed motives behind them. Competition usually denotes a struggle or contest in which one individual seeks to equal or excel another, or to obtain objects, recognition, prestige, attainments, or honors also sought by others. Coöperation, on the other hand, usually denotes joint action with others on a common enterprise toward a common goal. Although the one form of behavior is often regarded as the antithesis of the other, it frequently happens that both forms appear as parts of a larger project; many "competitive" games, for example, involve more coöperation than competition, just as many "co-operative" ventures entail a good deal of competition between individuals who are operating together to attain a goal.

When we observe children in everyday life, at home, on the playground, or in school, we can detect many activities that definitely appear to be competitive and others that seem to be co-operative; but frequently it is very difficult, on the basis of overt behavior alone, to judge whether one or the other or both of the two forms of behavior are being displayed at a given time. Moreover, a given act may be either coöperative or competitive. In connection with a class project, for example, one pupil may make a contribution primarily to promote the work at hand, while another

child, or the same child at another time, makes a contribution primarily to be heard or to receive recognition. Frequently the underlying motive is difficult, if not impossible, to appraise, although the pattern of a child's behavior from day to day is likely to provide some clues.

The difficulties that are met when we try to make an absolute distinction between competition and coöperation are likewise met when we try to estimate the relative value of the two forms of behavior. There are those who extol the values of competition and those who take it for granted that coöperation is good and competition is bad. Actually, no such "all-or-none" evaluations are justified. As a competitor, the individual asserts his own immediate interests; as a coöperator, he promotes the immediate interests of his group. In the end, the promotion of self-interest may be much to the disadvantage of the group, but it may also be of great value to the group. Similarly, the promotion of group interests will usually be of value to the individual, but it may also be damaging.

*Rivalry.*¹ During the first few weeks of life, the child's behavior cannot be described either as competitive or coöperative. Before long, however, many children exhibit signs of rivalry for the affection and attention of others. The term "jealousy," while used in a variety of meanings, is here used to designate rivalry for affection, involving an apparent desire for first place in the affection of others and intolerance of any real or imagined threats to one's security in the desired affections.

Signs of rivalry in matters of prestige and accomplishment usually are later in appearance than are symptoms of jealousy in connection with striving for the affections of parents, but many children at the age of two, and more thereafter, are likely to show some awareness of what the other child is doing and to be sensitive

¹ The topic of jealousy is here mentioned only in passing and is treated at greater length in Chapter IX. Many of the materials in Chapter IX were originally included in the present chapter, by reason of their relevance to the subject of social behavior, but were transferred to the section dealing with emotion, partly to avoid overlapping and repetition.

to their own showing as compared with the other youngsters, as revealed by expressions such as: "I am older," "I am bigger," "Mine's nicer." Frequently when thus vying with each other, children will go to great lengths. Thus one child, on hearing that today was the birthday of a playmate, proceeded not only to claim that today was *his* birthday too, but also went the rounds to individual children inviting them to his birthday party (12). The following dialogue (Murphy, 42) gives another illustration:

A: "I got two new dresses."

B: "I got three new dresses."

A: "I have three shoes."

B: "I have four—I mean I have eleven."

In such verbal "I am-better than-you" battles, the child with the superior vocabulary may have quite an advantage, as illustrated in the following encounter between two precocious five-year-old children:

John: "I can count up to 100."

Frank: "I can count to 1,000."

John: "I can count up to a million."

Frank: "I can count up to a billion."

John: "I can count up to a trillion."

Frank: "I can count to infinity."

It is not until after the third year that a large proportion of children exhibit evidences of rivalry concerning accomplishment, such as are displayed, for example, by children in the elementary grades. In a study by Leuba (33), children aged two to six years were brought into an experimental room singly and then in pairs. The children were given an opportunity to play with a peg board, and their conversation and behavior were recorded. In the two-year-old group, the presence of another child did not seem to have much influence on what a child did or said. The children exhibited little competition but showed an interest mainly in the materials before them. Three-year-old children showed some competition; they were interested in the social situation but showed awareness of what the other child was doing. At four to six

years, a majority of children manifested a desire to excel, and they exhibited an increased degree of understanding of the idea of excelling. At six years, some of the children also showed an increase in critical judgment of their own work.

Children aged two to seven years were observed by Greenberg in an experimental study of competition (20). Children were brought in pairs into a small room where there was a table and a pile of building blocks. The blocks were not divided; each child could reach and take as many as he wanted. The children were encouraged to build whatever they wanted with the blocks. When both children had announced they were finished or when the blocks were used up, the experimenter asked them: "Which is prettier?" The behavior of the children showed notable change with age in many respects. Older children were likely to go to work and to build something with the blocks, while the younger ones were likely to play in a more desultory fashion. Children aged two to four tended to pick up blocks as they needed them, but four- to seven-year-old children more often cornered a supply. There was an increase with age in children's tendencies to make favorable remarks about their own work and a steady increase from one year to the next in the percentage of children who exhibited various signs of competition (the percentages at the successive age levels of three, four, five and six years were, respectively, 42.6, 69.2, 75.4, 86.5). A majority of children aged four or more exhibited competition, but competition was not found in all children at any one age. The observations in this study indicated that a child's tendency to compete will be influenced by his degree of understanding of the idea of excelling another child, his competence in the project in which he and another child are engaged, and by educational factors. It also appeared that some children were more inclined than others to compete even when the foregoing factors were more or less constant.

Just what renders one child characteristically more competitive than another at a given age has not been proved by detailed developmental studies. It no doubt would be found that some chil-

dren who show outstanding competitive tendencies have been influenced a good deal in environmental pressures, such as being compared frequently with other children and being urged to excel. Competition in one sphere of activity likewise often may be accentuated by frustration or inferiority in another sphere. However, it still is possible that two children might differ considerably in their competitive tendencies even if these factors were equal. Concerning this point there is need for further investigation.

Rivalry Between Siblings. In McFarland's study of sisters observed in their homes, many instances of rivalry between twenty pairs of sisters were recorded, and the parents of the children all reported that rivalry of one form or another occurred in the everyday behavior of the sisters (37). However, individual children were aroused to rivalry by different types of situation, and pairs of sisters who showed rivalry most frequently did not tend to have fewer social contacts with one another or to quarrel oftener than was the case with sisters who showed signs of rivalry relatively seldom. McFarland points out that these rivalry responses did not seem to indicate a generalized attitude of one child toward another, which carried over into all of each child's behavior toward her sister, but rather a response that could be aroused in certain situations and did not appear in others. The rivalry seemed to be primarily related to the immediate situation, rather than to any chronic impulse to outdo the other child.

Competition at Later Age Levels. At the elementary-school age, it has been found that a majority of children will exert themselves more and accomplish more when working for themselves or for individual honors or rewards than when working for the group (35). The relative effectiveness of the incentive of working for self as compared with working for the group varies, however, with different children and in different projects. In like manner, if the flavor of a contest can be injected, many children are likely to exert themselves more when working as a group in competition with another group than when this element of competition is lacking (24). In such rivalry, Maller has observed that

children are likely to exert themselves more when the group is one of the children's own choosing than when it is one to which they are arbitrarily assigned.

One thing much needed is more research that deals with competition and coöperation in realistic settings. In the case of young children, it is possible to devise quite realistic experimental play situations, but with older children it seems to be more difficult, for, in the latter case, the experiment may simply touch off specific habits of competition that have already been established, so that the dice are already loaded in favor of competition. For example, after children individually have struggled to master problems in addition, it is only reasonable to expect that they will apply themselves more energetically when working as lone performers than when they are asked simply to work hard to raise the general average of the class. A real test of coöperativeness would require situations in which opportunities for coöperation, by way of mutual aid, delegation of tasks and roles, recognition of common objectives, and the like, occur as functional features of a project that children actually feel some concern about.

When measurements have been made on the basis of limited tasks devised for experimental purposes, the general trend of the evidence indicates that competitive tendencies are stronger than coöperative tendencies. On the other hand, when the method of direct observation is used to study children as they go about their business in their own way, the evidence is not nearly as unequivocally in favor of competition.

Motives and Values. The many variable factors in both situation and in individual make it difficult to lay down any general rule concerning the conditions under which competition is likely to arise, the effects of competition, or the merits or demerits of competition. The issues over which children compete vary from child to child. A child may be highly competitive in one group and not in another. A child may applaud and feel delighted when some of his associates equal or surpass him but react in quite the opposite manner when others, with whom he does not feel

as closely identified, succeed under similar circumstances. Again, a child may find much satisfaction in the success of a youngster with whom he has no especially friendly ties but who succeeds in surpassing someone else with whom the child has competed unsuccessfully. Behavior that appears to be highly coöperative or even self-sacrificing may spring, indirectly, from competitive motives, and, contrariwise, a person may show his coöperativeness by plunging zestfully into a competitive enterprise. Among adults, one group of individuals may coöperate zealously to foster or protect a competitive mode of life, while others enter into spirited competition to promote a coöperative society.

In general, competitive enterprises among children are likely to be most zestful when the competitors are about evenly matched, although there are many exceptions to this. Oftentimes, when an older and a younger child are competing in a foot race, the abler child will voluntarily assume a handicap or give the other a "head start," in order that there may be a semblance of a contest (however, such sporting tactics are less likely to appear if there are spoils for the victor at the end of the race). When the odds continually run strongly against him, a child may cease to compete and may even backslide; but even in a one-sided contest, the effects of competition may still be salutary. A boy who was husking corn with his own wagon and team and who did about thirty-five to forty bushels a day when left to himself, rose to fifty bushels per day for a few days when a man who regularly husked eighty-five bushels a day came into the field, but then after a few days gave up the contest with the superior worker and slumped back to forty. When this man left and the boy was alone again, he slumped still further to about thirty-five and sometimes as low as twenty-five. Shortly thereafter, he kept a pace of slightly above fifty bushels a day when a man who habitually did about that number joined him in the field; on odd days, when a neighbor who did between sixty and sixty-five bushels a day joined in the work, the boy's output rose to about sixty and reached a peak of sixty-five. This high point was reached partly by virtue of pre-

ceding practice, but much of it was accomplished through the spur of competition, for he again reverted to an output of fifty to fifty-five bushels when the fifty-bushel man was the only other person in the field.

In the illustration above, the role of the other person in the field was at once that of competitor and pacemaker; he provided a visible standard of achievement, and the opportunity to compete with this standard gave zest to an otherwise tiresome job. In countless practical situations, the presence of a pacemaker and competitor may be of value, not only in the doing of a specific job, but also in the larger sphere of habit formation and social conduct. This is even more true of children than of adults, for the child's performance is more fluid and variable than is an adult's, and the opportunity to appraise his own performance in the light of the performance of his peers can bring home to him many lessons that cannot be impressed upon him by adult exhortations alone. Under the spur of competition with a visitor or camp mate, the child may discover that he can put on his shoes in half the time it used to take, stub his toe without crying, jump into the water without cringing, endure a slight without running to mother to complain, exhibit a modicum of sportsmanship, or do homely chores without feeling abused. In such behavior there are many of the elements that are involved in competition, namely, recognizing a level of achievement as exhibited by another and striving to close the gap between this standard and one's accustomed performance, or to surpass the standard.

Perhaps the term "emulation," as customarily employed, is a better term than "competition" to describe achievement that is stimulated by the standard set by others, but such labeling at best is arbitrary, and the difference is more one of degree than of kind. It likewise is difficult, in practice, to establish a thoroughgoing distinction between ulterior and indigenous rewards or to establish rewards in such a way that one competitor does not enjoy advantages to the exclusion of the other. For example, two boys on a farm who vie with one another in the grain field at harvest time,

do so not merely for the pleasure of it, for the one who does the best job will in time be allowed to have his own wagon and team, while the less competent will remain a "spike pitcher" or helper, and the abler worker may even win the high privilege of being a member of the threshing crew that goes the rounds of the neighboring farms. From the point of view of the boys, here is an ulterior reward. But when the matter-of-fact farmer assigns a wagon and team to the more competent boy, he is not, either from his point of view or from the standpoint of the job to be done, bestowing a prize upon the winner; he is simply giving added responsibility to the boy who seems best able to carry it. Many corresponding illustrations could be given from everyday life at home and at school.

Competitive situations are likely to arise in one form or another in any enterprising society that is not smitten by indigenous disease, hookworms, or other conditions that make for general lethargy, but the situations may differ in different cultures and even in different localities within the same culture. In a given set of circumstances, the competition at one extreme may be seemingly inevitable and spontaneous, while at the other extreme it may be forced and manufactured. At one extreme, the rewards may flow naturally from the enterprise itself; at the other, there may be highly artificial rewards. On the subjective side, one competitor may strive with zest and a light heart and take his successes and reverses in stride, while another is driven by inner distress, uses the enterprise only as a way station toward a more remote objective, and is troubled with a sense of inferiority or with feelings of spite and vengefulness if he cannot be top dog. More often, the individual will be found somewhere between these extremes. Frequently, in adult life, a person will veer toward one extreme in one area of competition and toward the opposite extreme in another area.

Coöperation. As noted earlier, conflict and rivalry frequently attract more attention than do instances of friendliness and co-operation, with the result that the weight of former types of be-

havior is sometimes overestimated, while a great number of coöperative acts come to be taken for granted. It would be impossible precisely to measure the duration or frequency of one type of behavior as compared with the other, for, as noted above, it is difficult to make a thoroughgoing distinction between them simply in terms of overt acts, and to distinguish between them in terms of underlying motives is even more difficult. In the study of children's conflicts with one another (described earlier), it was found that the average preschool child aged two to four years got into a conflict approximately twelve times per hour. This figure looks quite impressive until it is also noted that the conflicts were usually very brief and that the social interchanges in which no friction occurred far outnumbered those in which there was a conflict.

The findings in a study by Mengert (39) are instructive in this connection. Two-year-old children were observed when brought into a small playroom in pairs during twenty-minute periods. Each child in the study was paired with each of the other children. When responses were tallied, those which could be classed as overtly friendly outnumbered the overtly unfriendly responses by more than four to one (the respective average scores were 89.5 and 20.5). Preliminary findings in a study by K. McKinnon also bear upon this problem; children in the second grade were observed during class periods at times when they were relatively free to express themselves. Preliminary findings indicate that the children showed an average of 6.2 friendly responses per fifteen minutes, as compared with an average of 2.05 hostile responses.

The exact proportions between friendly and unfriendly responses will vary considerably with different children and in different situations, but it is significant that, in both of the above studies, the balance runs so strongly in favor of the friendly forms of behavior. Indeed, even in the case of children who exhibit relatively much aggressive or hostile behavior, such behavior may still be outweighed by nonhostile social contacts. In a study by Jersild and Fite (29), it was noted that two children (in a group

of sixteen) were outstanding with respect to the relative frequency of their conflicts; in both cases, however, social contacts that did not involve conflict outnumbered those in which aggressions occurred.

Obviously, findings such as those just cited do not answer the question as to the nature and extent of coöperation in the social relations of young children, for "friendly" and "nonhostile" acts may be relatively passive and "neutral." Moreover, since environmental pressures are at work from an early age, we can not be sure to what extent the behavior that is exhibited is "natural" and to what extent it is learned or acquired. But at any rate, the findings, as far as they go, indicate that the potentialities for behavior that veers in the direction of coöperation are just as strong, if not considerably stronger, than the potentialities for the assertion of individual impulses at the expense of or in opposition to others.

As already indicated, these tendencies actually need not be construed as antithetical or mutually exclusive, for the child who is most mobile and enterprising is likely to exhibit both forms of behavior more frequently than the child who is relatively inert.

CHILDREN'S FRIENDSHIPS

Friendships Among Young Children. Before the age of two, children can be observed to show preferences among other children who are familiar to them, and at the age of three or four years strong attachments between two children may occur.¹ Such attachments sometimes last only a few days or weeks, but frequently they persist over a period of months and even years, even though in the meantime each child may have had many opportunities for forming equally strong companionships with other playmates.

Illustrations of companionships between young children are shown in a study by the writer and Fite in which nursery-school children were observed in the fall and in the spring of a year.

¹ For discussions of friendships between young children, see Beaver (1), Challman (8), Green (19), and Hagman (21).

Among the children who had spent a year or more in the same school, it was found in some cases that over half the number of a child's total social contacts were limited to one other child who was a friend carried over from the previous year.

Companionships between children as young as three may become so engrossing as to limit a child's sphere of activities, as when the dominant member pre-empts all of a companion's time and attention, and prevents him from widening his social contacts.

An interesting account of a preschool "gang" has been offered by Beaver (1). The group described included three boys, aged three years one month to three years eight months. Two of the boys seemed to be always together, and the third joined them a great deal of the time. Frequently, other children on the playground tried to break into the play of the three boys, but usually they were ousted by means of shouts, screams, protests, pushing, and occasional hitting, although some children were able to crash the gates. It was observed that the least secure member of the group was the most "exclusive"; this boy, who would follow the lead of the other two and who had least influence on the play of the little group, was especially vehement in trying to keep others from joining the group. It was apparent that one boy was the mainspring of the "gang"; he took the lead in making suggestions for play. In companionships less closely knit than this one, it likewise has been observed that one member often tends to dominate the relationship, although the techniques of domination vary; and sometimes, to be sure, one child may take the lead in one situation, while another child dominates other situations.

Factors that influence the formation of friendships in young children include those of similarity in age, height, weight, intelligence, or sociability, similarity of interest, resemblance to a previous companion or a sibling, resourcefulness in enlisting co-operation, and so forth. But each such friendship has peculiar characteristics of its own. Frequently, when a child first comes into a group, he will attach himself to another youngster who shows himself to be friendly and helpful. As the new child be-

gins to find his way around and feels more sure of himself, he may break away and seek other friends. Sometimes children in a nursery school can be observed to make what seems to be a deliberate effort to win the loyalty of a newcomer or of a timid child, by such techniques as hovering near the child, smiling, patting, invitations, and suggestions as to games that might be undertaken. As noted elsewhere, the efforts of a child to hold a companion who is trying to break away may precipitate many altercations.

Among young children, one can frequently observe a child who seems to have no particular friends among the other children. Such a child may be one whose behavior is such that others reject him; he may be one who is ill at ease with other children and seeks rather to associate with adults who might happen to be around; or he may be a child who seems quite happy and interested in following his own solitary pursuits, seeking neither child nor adult companionship to any considerable degree. One such rather solitary child, who was observed in one study, was unusually precocious in his language development; he used words that other children could not understand, and, when he approached them, they did not actively rebuff him but merely gave him an uncomprehending look and went their own way.

Sometimes a child may be friendless by reason of characteristics which other children find unpleasant. A conspicuous example of this was a boy who spent two years in a nursery school but never, as far as could be ascertained, was warmly received by any other member of the group. This boy had a habit of poking about, edging up now to one group, now to another, and always letting his presence be known by asking, in a somewhat whining tone, such questions as "What's that you are making?" "Why do you do that?" "What's that for?"

Factors in Friendships of Older Children. To make even a beginning in probing the complex factors that determine friendships among older children would require intensive, long-time study, although some of the more obvious and superficial factors can

readily be discerned. A child's choice of friends and close associates naturally must depend to a large degree upon who is available. When children name their friends in response to questioning, the persons they name are likely to be children who live near them, who use the same playground, and who attend the same school and the same class (49). This same factor operates, of course, to a large degree also in determining friendships among adults. Moreover, propinquity is not entirely a chance factor, since, in the case of adults at least, such matters as similarity in education, economic status, profession, group loyalties, and the like will carry a good deal of weight in deciding where one is going to reside. Apart from this factor of spatial nearness, children are more likely to choose as friends those who are similar to them in various characteristics—such as intelligence, height, and age—than children who are dissimilar. Although general similarities may be found when the average scores of friends are compared, close friends may differ considerably with respect to any of these characteristics, and frequently a difference which enables friends to complement one another or which enables one to occupy an ascendant or nonascendant role plays an important part. Children of elementary-school age are likely to name as their best friends children of the same sex. Relatively little study has been made of factors of emotional make-up, temperament, interests, and tastes which draw children together as friends.¹

Popularity. Characteristics of children who are most and least popular with their associates have been described by Hardy (22). Several hundred children who were subjects in a four-year investigation, which began when the children were in the third grade, and concerning whom a good deal of information was available were asked, in private interviews: "With whom do you like to do things when you are just fooling around or when you play games? Which of the children do you like the best?" Comparisons were then made between a group of thirty-eight children who were

¹ Comparisons between friends among children beyond the preschool age have been made in studies by Furfey (14), Jenkins (26), Seagoe (49), and Wellman (54).

frequently mentioned as liked best and a group of fifty-four pupils who seldom or never received such mention. Among other things, it was found that the best-liked children were far superior to the least popular children in their general classroom behavior; few of the former group were reported by teachers as having difficulty in getting along with other children, while over half of the least popular were described as being unable to work and play amicably with their associates. The best-liked children had somewhat higher average intelligence and scholastic ratings, and they were quite superior, on the average, in the skills involved in playground activities and in tests of physical achievement (in performances such as running, throwing, and balancing); seventy per cent of them were above the average of the school population as a whole. The best-liked children also tended to have better health ratings, but the differences were not large enough to warrant definite conclusions on this score. As a group, they also were rated as better looking, although five per cent of them were classed as "homely"; there was no significant difference between popular and unpopular children with respect to size. Relatively little relationship was found between popularity and order of birth. In a somewhat larger percentage of cases in the best-liked than in the least-liked group, a foreign language was spoken in the home (a factor that will, of course vary in different localities), the mother was employed, and the children worked for remuneration outside of school hours (the direction of the difference here is interesting but not conclusive). The foregoing statements, it can be seen, indicate that many differences can be noted. It would be revealing if more information were available, not simply in terms of comparisons between groups with respect to this and that factor, but also in terms of the manner in which various traits and factors combine to produce popularity or unpopularity.

BOY-GIRL COMPANIONSHIPS

Interesting trends appear in social relationships between boys and girls, and in the ways in which boys and girls come in time to adopt patterns of behavior that conventionally are regarded as

"boyish" and "girlish." When the child is first old enough to enter into social relations with other children, distinctions between boys and girls are not likely to appear; boys and girls play together and enjoy much the same activities. Even at the preschool level, however, distinctions and differences appear. In some studies it has been found, for example, that boys tend on the average to be somewhat more active in their play, although differences within each sex group are larger than the differences between the two sexes. It likewise has been observed that, at the age of three and four, boys enter into a larger number of conflicts than do girls and are more likely to resort to hitting, although in this particular there also is much overlapping. In a mixed group, it also appears that boy-boy and girl-girl conflicts are likely to be more frequent than conflicts between a boy and a girl, but there are large individual differences. At the preschool level, likewise, especially after the age of two years, boy-boy and girl-girl friendships are likely to be more numerous than friendships between a boy and a girl.¹ However, even though boys tend to play more with boys than with girls and girls tend to play more with girls than with boys, there is a good deal of interplay, and at this early age a child is not materially affected if he is in a group in which all members are of the opposite sex. The extent to which sex cleavages appear will vary in different groups, and in some situations, there may be little or no manifestation of sex distinctions.

Changes associated with age in the social-sex relations of children have been described by Campbell (7) in a study of children aged five to seventeen years. In the age range from five to eight years, it was found that the average boy would play contentedly with a group otherwise composed entirely of girls; that he was not likely to show protective habits toward girls; that he was not self-conscious with regard to posture, gesture, and clothing in the presence of girls, or with regard to physical contacts with them; that he was not concerned with girls as attractive creatures and would fight them or would choose one for his "side" if the game did not involve physical skill. In general, he preferred

¹ See Challman (8) and Hagman (21).

women to girls, especially women who would play with him. After the age of nine, there was a greater tendency for boys to prefer boys on their "side," and the boys began to show more self-consciousness with respect to physical contacts and to being alone in a group of girls. From age fourteen to seventeen, boys showed more evidence of self-consciousness and embarrassment when girls paid attention to them; there was more concern with physical appearance, dancing became popular, and they began to wait on women and to show attentiveness. The youngest girls, likewise, showed little embarrassment about posture, clothes, physical contacts, or being alone with a group of boys. At age eight and onward, more self-consciousness appeared; there was a greater tendency to avoid groups consisting entirely of boys and to avoid physical contact, and there was more awareness of games that are "boy" games and "girl" games. In approaching the 'teens, the girls exhibited a "whispering period"; they became more "modest" and conscious about their clothes and about exposing their bodies. From the age of fourteen and onward, there was an increasing interest in boys, in deferring to them, sitting next to them even if teased, and using techniques to attract them, just as boys at this period try to attract girls and both boys and girls increasingly try to adopt adult manners and customs. Boys were found to lag somewhat behind girls in certain manifestations of heterosexual interests. It was noted, among other things, that whereas boys, as they grew older, lost interest in displays of adult affection, a similar loss of interest was not shown by the girls.

As mentioned above, children show decided individual differences in the age at which they exhibit various reactions, such as those described above. Children as young as four or five may report a strong attachment for a member of the opposite sex, announce that they are going to marry a certain child when they grow up, and so on. In the early elementary grades, individual children may build up many seemingly romantic phantasies, exchange love notes, exhibit jealousy and rivalry concerning "boy friends" and "girl friends." There are large individual variations

as well as large group variations in this matter. The idea of having a "boy friend" or a "girl friend" may be quite prevalent in one group of children in the early or intermediate elementary-school grades, while in another group of children of similar age, there may be practically no evidence of preoccupation with such matters. Even when the idea prevails, however, children below the age of ten or eleven are not likely to be as preoccupied with it or to view it with as much seriousness as do children who are several years older.

LEADERSHIP

The subject of leadership, like that of friendship, has been investigated extensively, and certain general trends have emerged in the findings; but systematic inquiry into the more subtle aspects of leadership—including motives, dynamics, and techniques—would bring to light many interesting insights that cannot be obtained simply by measuring such matters as intelligence, age, and height or by applying various rating scales to large numbers. Certainly, it is true, even at the preschool age, that the techniques and characteristics of two children who are leaders may differ decidedly, even within similar situations and even though the children may be practically the same in height, age, intelligence, and more obvious features. An example of this appears in a study previously cited (29). One child may, for example, be a leader partly by reason of the fact that he is very voluble and mobile, and that, in the process of covering much ground, he happens frequently to get a follower. Another child may take an upper hand in selecting and dominating the play activities of a group by virtue of aggressive methods and various forms of coercion. Still another child may lead by reason of his resourcefulness in seeing new and original possibilities and in establishing friendly relations with other children.

An example of this is the case of a child who had a knack for making the other fellow feel important, while he himself was running things. On one occasion, for example, he initiated a

make-believe game of running a boat. He approached another child, asked him to be the captain (saying: "The captain is the big boss, you be the captain. I'll be the engineer."), and then, when the "captain" was installed in all his glory on the deck of the boat (a big box), the humble engineer, from below, ran both the captain and the ship.

The apparent differences between children in their ability to exercise leadership may be quite deceptive. The child who makes quite a splash and who seems to be directing others may actually be having less influence than a child who is mild and quiet in his ways but who suggests ideas which a more aggressive child proceeds to exploit.

The characteristics of the leader among children who are older are likely to vary somewhat with the nature of the situation in which he takes the lead. Athletic leaders, for example, are likely to stand high in physical achievement; leaders in intellectual activities in the classroom are likely to be those who stand high in scholarship. In a study by Caldwell and Wellman (6), children who were leaders in school were found to be above average in scholarship. The difference was not so large in the case of athletic leaders, but even these exceeded the average of their class. Leaders were rated as extraverts, with the exception of those on the editorial staff of a school publication. The leader is likely to be somewhat above the average of his group in intelligence and, as a rule, he is likely to be somewhat larger, better dressed, more fluent of speech, better looking, more self-controlled, and more daring. In a study by Terman (51), it was found that leaders tended to be conspicuous, even though they might not be conspicuously good; they tended to rate either very high or very low, rather than merely average, in such matters as size, dress, and schoolwork. However, it appears that a child may quite fail to achieve leadership if he is too far above his associates in ability. In many situations, the leader is one who also can be a good follower when occasion so demands.

An interesting item in this connection is reported by Hollingworth from a study of gifted children (23). A nine-year-old child,

with an intelligence quotient of 190, lived in practical isolation from the social activities of his schoolmates in a public-school fifth-grade class. After his exceptional mentality had been discovered by a mental examination, he was moved from his class into a special "opportunity class," in which the children had an average intelligence quotient of over 160. Before the end of the year, he held a position of high prestige among his fellows; he was elected editor of the class paper ("because A knows so much") and class monitor ("because A will make us behave"), and the next year was elected captain to lead in contests against other classes. His former classmates, being average children, had not understood him; the child himself, by reason of his high mentality, was interested in matters that went beyond the level of the average child of his own age. It was only when placed with children who themselves had high qualifications that his superior merit was recognized.

In the study by Jennings (27), sociometric techniques¹ were applied at intervals during a period of two years and seven months to study affinities between members of a group and evidences of leadership. The subjects were girls, aged twelve to eighteen years, in a training school. From an earlier study, it appeared that the choosing of table associates, "eating at the same table," provided a significant basis for the study of the role occupied by the individual members. Among the findings were the following: In a group structure that already is highly evolved and quite firmly established, it may be very difficult for a child who is on the fringe to enter and participate; leadership appeared to be a process of choosing as well as of being chosen—it was observed that incipient leadership was indicated by the fact that children on their way to a leading position would choose individuals who already occupied a position of leadership, even though such choices at first met with no reciprocation or encouragement; children who suddenly moved into a prominent position were more likely just as suddenly to lose their prominence than were the individuals who pushed steadily

¹ For an early report of the development and applications of "sociometric" techniques, see Moreno (40).

and gradually to the fore. Once a child had acquired a prominent position through persistent effort, she was not easily displaced.

Practical Considerations. Although superior ability and skill may not alone suffice to make a child a leader, yet the fact that the more able are most likely to lead has obvious implications for education. But leadership need not be viewed as an all-or-none or absolute matter. When children make their own selections, as we have seen, the choice may fall upon different children in different activities and projects. This fact alone allows several children to experience a measure of prominence within a given group. Apart from this, however, there may be varying degrees of authority and prestige. From the point of view of the children's social adjustments, it is not so important to see that every child becomes a leader—since this would be nearly impossible; it is more important to see that he is not always at the other end of the procession, always distinctly in the back seat, always overwhelmed by the prestige and authority of others, and never given a chance to assert himself as an individual. The fact that there is a leader at one end does not imply that there must be a browbeaten nonentity at the other.

Frequently, by taking a child in hand, helping him to improve his skills, aiding him to overcome his reluctance to assert himself in the activities of the classroom or playground, a youngster who is always in the back seat can be helped to gain a higher degree of self-assertion and to greater esteem in the eyes of his fellows. Frequently, when a child is allowed to "feel his oats," if only for a short time in a minor activity, the effect may be pronounced.

Following is an illustration of how an adult may take a hand. A nine-year-old girl, of foreign birth had recently come to school; she was learning to speak and to read English, and was far behind the other children. The teacher, by a deft maneuver, turned this child's handicap into an advantage; she brought this child's native country into the class discussion and asked the child to give the correct pronunciation of names of cities in that country and to translate a few sentences into her native tongue. Her foreign

extraction, rather than being an occasion for ridicule and embarrassment, now became a matter of distinction and pride. The child was not made a leader through this device, but she was raised in the estimation of her classmates and had the experience of being somebody. Experienced teachers can cite any number of similar opportunities: here is a child who was dubbed a "trouble-maker" by his teachers and was unpopular with his classmates, until one of his teachers discovered he had a splendid voice and gave him an opportunity to express his talent; here is another who was helped to achieve a place in the sun through his mechanical abilities (in mending pencil boxes, bags, and other articles), which, in the ordinary course of the school's activities, he had no opportunity to show; and so forth.

The Drive for Social Status. In time, through a combination of many factors, one of the strongest motives in a child's life is the desire for being accepted, for belonging, and, eventually, for some measure of recognition and prestige. This expresses itself first in a child's desire for security in his relations with his parents. When he moves into a larger world, a similar desire goes with him. In young children, one sometimes sees extreme expressions of this when a child will go to almost any length in order to be noticed. Many children become angrier if they are completely ignored than if they are crossed and punished, but whether their bid for attention takes the form of humility or perversity, or merely follows a middle road, underneath it there is a wish to be noticed and appreciated.

In his home relations, a child's underlying security counts for a good deal more than this or that practice which his parents may use. By virtue of this, many specific rules with regard to how children should be reared may be more of a hindrance than a help, especially if such rules inhibit natural and common-sense reactions, and cause parents to indulge or restrain the child in ways that eventually bring trouble to all concerned. The value of any particular technique for disciplining the child depends not so much on the method itself as on the total setting in which it is

used. Some children who are occasionally spanked, for example, are more serene and spontaneous in their relations with their parents than are children who are never spanked but are subjected to subtle expressions of intimidation and rejection. Obviously, recourse to violence in a parent's dealings with his child may be just as stupid and unnecessary as would be the use of violence in dealings with his business associates, but an emphatic gesture by an adult who knows his own mind and has an intelligent and sympathetic regard for the child's welfare may be less disturbing to the child than the practices of a parent who punishes or picks at the child in more subtle ways, or who is driven near to emotional collapse in the struggle with an active youngster. On the other hand, if a parent chronically wavers between love and rejection of the child or depends heavily on the child as an emotional outlet or support, there is likely also to be instability in the child's emotional life.

In his relationships outside the home, the child has a similar need for an emotional anchorage. Other adults who are in a position of authority with respect to him, such as the teacher at school or his playground director, are, to a large degree, reacted to as substitute or temporary parents. However much the child's behavior sometimes may gainsay it, he still greatly desires the approval and affection of these substitute parents. For this reason, the attitude of the teacher toward the child may have a profound effect, even though the child may try not to reveal it. Even the most incorrigible child, who may seem to be endowed by the devil himself, usually would like very much to be liked by his teacher. If he is a spoiled child from the start, has poor techniques that rub the teacher the wrong way and produce a negative response, he may, from the very beginning, get the impression that the teacher is against him. His answer may be further obstinacy, rebelliousness, and all manner of methods designed to plague the teacher. Frequently, the child who gets a bad start when he begins school develops habits and acquires a reputation that follows him from class

to class and from teacher to teacher. The behavior of such a child may be very irritating and cause much distress to the teacher, yet his own condition may be even more pathetic. To break through the crust of hostile habits and attitudes which a child in this plight has acquired is one of the most difficult tasks that confront a teacher.

The child's desire for status appears also, as has been pointed out earlier, in his relations with other children. In a heterogeneous group of children, one can sometimes observe several circles or cliques, varying in prestige. There may be a small distinguished circle which all the children would like to join, but failing in this, some of them must seek companions at another level, so that sometimes the cronies with whom a child regularly associates represent second or third choices. This does not mean that children establish fixed social hierarchies or that each child is distinctly conscious of his own position or of the various features of the informal social organization in which he lives. But, even so, the society in which the child finds himself is not simply a helter-skelter aggregation of so many children.

While the average child may learn to find his place in the childhood social milieu and contentedly take whatever place he can win, there are some children who are more deeply affected. A child who is rejected by his fellows may develop resentments and compensatory drives that influence his behavior for years to come.

Some indications of the characteristics which children value are offered in a study in which three hypothetical children were described and the child was asked to make a choice as to the one he would like best to be (28). The children ranged in age from eight to twelve years and in number from 124 to 278 at each of these age levels. One of the three children so described was "very strong and fast; he had fine muscles; he could run faster than anyone and he was always able to win at games." The second was "very bright, and quick at getting his lessons; he could learn very fast; he knew more than other children, and he did better than

anyone else in his school subjects." The third was a "very good-looking boy; he was more handsome than anyone else and everyone who saw him noticed that he was the nicest looking and handsomest boy." In each description, it was pointed out that the child got along well in school, that the teachers liked him, and that he had plenty of friends. Corresponding descriptions were offered of three girls. An approach such as this, taps a child's formulated aspirations to only a limited degree, and it does not probe the yearnings that he may be unable to formulate or put into words, but the findings are instructive as far as they go. The percentage of boys and girls choosing each of these characters is shown below:

TABLE XVI

<i>Description of Child</i>	<i>Boys</i>					<i>Girls</i>				
Age in years.....	8	9	10	11	12	8	9	10	11	12
Strong, fast, winner at games.....	35	55	51	63	49	36	33	28	25	30
Bright, fast learner at school.....	57	41	41	35	52	46	52	64	62	64
Good-looking.....	9	4	8	2	0	18	13	8	13	6

It can be seen that, at all age levels, a large percentage of both boys and girls expressed themselves as setting high value on being strong and fast and a winner at games, but more boys than girls expressed this desire; more girls than boys expressed a wish for being the child who was bright and quick at learning; the handsome or pretty child received the smallest proportion of votes cast by both boys and girls, but this child was favored more by the girls than the boys. When a separate tabulation was made of the responses given by a selected group of dull-normal children (I. Q.'s ranging from below 80 to about 100) and a selected group of bright children in the same public school (I. Q.'s ranging upward from over 120 to about 180), it was found that the boys who already were bright voted to be the bright boy more often than did the dull boys (fifty as compared with thirty per cent), but in the case of the bright and dull girls, the vote for this child was about equal (forty-five and fifty per cent).

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CHAPTER VII

DEVELOPMENT OF SOCIAL BEHAVIOR (CONTD.): THE EFFECT OF CERTAIN ENVIRONMENTAL FACTORS

The present section deals with selected lines of study concerning the ways in which environmental conditions may influence a child's social behavior. Numerous examples of environmental influences have already been noted in the preceding chapter.

EFFECTS OF NURSERY-SCHOOL EXPERIENCE

In order to learn to live sociably with his fellows, a child must of course have a chance to associate with other children. Partly for the purpose of supplementing such contacts as the young child may have with other children in his home environment, an increasing number of parents in recent years have established co-operative play groups or have used the facilities of day nurseries and nursery schools. Several studies have been made to probe some of the effects of such opportunities. Procedures used in such studies have varied. In some, comparisons have been made between the behavior of children before and after nursery-school attendance; in others, children have been studied to note changes during the course of their attendance; in still others, children have been compared at a later time with other youngsters of similar age who have not attended nursery school. In studies of this kind, it is important to take account of the factor of maturation, among other things; for, in the normal course of development, there are changes in the character of a child's social activities, whether or not he happens to be a member of an organized group.

Group Trends. Among the trends indicated more or less con-

clusively by studies¹ in this area are the following: nursery-school children have shown an increase in participation in group activities and in number and variety of social contacts, and a diminution of "onlooker" forms of behavior; they have shown an increase in social poise and spontaneity in social participation and a decrease in the tendency to show fear of other people, to shrink from notice, and to hover near adults. In several studies, it has been noted that, on the average, nursery-school children have improved in their routine habits—competence in self-help in eating, dressing, toileting, and so forth—with resulting increases in freedom of action and diminished dependence upon adults. The opportunity to be with other children, to observe the example set by them, and to emulate them frequently helps, at least for a time, to stimulate improved habits in eating, self-help, and other enterprises; and through the stimulus of companionship, a child may come to change his behavior in many ways. Frequently also, nursery-school attendance seems to help to dilute tensions between a child and others in the home environment. Gains have also been noted, as one might properly expect, in skill and resourcefulness in using the play materials and equipment provided by the nursery school. Some of these gains may be only temporary, to be sure, or restricted largely to the nursery-school environment, especially if different habits are cultivated at home.

It is noteworthy that the children's gains in sociability do not mean that the individual children are being submerged more and more by the group. Rather, along with an increase in sociability, it has also been found that there is an increase in the child's tendency to exercise independence, to assert himself as an individual, to stand up for his interests and his rights as he sees them. In observations of nursery-school children it has been found, for example, that children's scores in resistance (the number of times they refused, by word or deed, to carry out the demands of others,

¹ Representative studies that deal directly or indirectly, in whole or in part, with this problem include investigations by Caille (1), Cushing (2), Ezekiel (3), Greene (5), Hattwick (6), Jersild and Fite (9), Jersild and Markey (10), Kawin and Hoefler (14), Mallay (18), Murphy (19), Parten (23), Taylor and Frank (25), and Walsh (27).

to yield ground to another, and so on) was somewhat more closely related to the length of time the children had spent in nursery school than to the factor of chronological age (Caille, 1). Again, it was observed in one group of children that children who at the beginning of the school year were rather unaggressive showed an increase in their tendency to attempt to make themselves the center of an activity; on the other hand, those who showed this tendency more strongly when the school term first began continued to retain this characteristic with the passage of time (Ezekiel, 3).

Individual Variations. The foregoing statements are based upon general trends or averages for entire groups. Actually, many children fail to show the same trends as the average. Thus, in one study of twenty-one children, it was found that, while there was a large average increase in frequency of successful social contacts made by the children as the year progressed, there were a few children who showed a loss rather than a gain (18). In another study (9), it likewise was observed that, while the group as a whole showed a sharp increase in frequency of social contacts, there were some children who showed relatively little change, and two children showed a loss when records of behavior in the spring were compared with records of behavior after the school year began in the fall. Indeed, even in the case of children who do not go counter to the trend, the adjustments that are made and the changes that may be exhibited are likely to vary considerably from child to child. To gauge the effect of nursery-school experience and fully to appraise its value, would require quite intensive study of the individual child; but although this is recognized, the general drift of findings based upon surveys of groups, rather than intensive study of each individual, are still significant and have practical implications.

Illustrative Findings. Table XVII illustrates the extent to which individual children may change during the course of a year. In the study on which this table is based, a group of children was observed in the fall, soon after the beginning of the school term, and again in the spring, near the end of the school

year. Each child was observed systematically a number of times (ten fifteen-minute periods in the fall; eight five-minute periods in the spring). Among other things, a count was made of "social contacts"; the child received a tally of one for each half-minute period during part or all of which he engaged in social interchanges with other children. The table shows results in terms of percentages; a value of fifty per cent means that the child was in social contact with one or more of his schoolmates during half of the intervals during which he was observed. At the beginning of the study, the children ranged in age from two years, ten months, to three years, eleven months; the average age was three years, five months.

TABLE XVII
PERCENTAGE OF INTERVALS DURING WHICH
SOCIAL CONTACTS OCCURRED
(Chronological ages in years and months, in the fall, are shown in parentheses.)¹

<i>"New" Children (without previous nursery-school experience)</i>			<i>"Old" Children (with one or more preceding years of nursery-school experience)</i>		
<i>Name</i>	<i>Fall</i>	<i>Spring</i>	<i>Name</i>	<i>Fall</i>	<i>Spring</i>
Alice (3-6).....	42.0	82.5	Holden (2-11).....	67.3	45.0
Thelma (3-8).....	25.7	58.8	Dennison (3-0).....	64.0	81.3
Dick (3-9).....	25.7	64.5	Nancy (3-6).....	58.3	83.8
Sally (2-10).....	25.7	43.8	Evan (3-6).....	53.3	71.3
Morris (3-10).....	14.0	47.5	Kirk (3-5).....	46.3	71.3
Nell (3-1).....	10.0	61.3	Joyce (2-10).....	21.7	42.5
Sammy (2-10).....	6.0	21.3	Bernard (3-8).....	19.3	12.5
Average.....	21.3	54.2	Average.....	47.2	58.2

Children "new" to the group but with one year of previous experience in other, separate, schools:

Jerry (2-10).....	50.3	73.8
Carter (3-6).....	36.7	71.3

It can be noted that the "old" children represented in Table XVII exhibited more than twice as many social contacts, on the average, at the beginning of the school year as did "new" chil-

¹ Adapted from Jersild, A. T., and Fite, M. D.: *The Influence of Nursery School Experience on Children's Social Adjustments*, Child Development Monographs (New York: Teachers College, Columbia University, 1939), No. 25, 112 pp. Reproduced by permission.

dren who had never before attended nursery school. But by spring, the two groups were practically equal. Indeed, computations not shown in Table XVII indicated that the "new" children began to gain rapidly on the "old" ones during the first few weeks of school.¹

An analysis of the behavior of individual children showed that a large proportion of the social contacts exhibited by the "old" children in the fall consisted of interchanges between pairs of children who had become close friends during the preceding year, but even when such contacts were discounted, it did appear that the veteran nursery-school children surpassed the new recruits in readiness to enter into social enterprises when the school year began. However, as noted, the new children had not sustained a permanent disadvantage by virtue of not having had one or two previous years of experience; even while not attending nursery school, they were maturing and gaining such experiences as children may encounter outside of school, and, when given a chance, they quickly made up for lost time, so to speak. This does not mean, of course, that by delaying a year a child can gain as much from nursery school as he would gain had he attended that year as well as the year before. To measure the values that were gained from earlier attendance, it would be necessary to take account of the situation of each individual child, to appraise benefits other than those indicated simply by a tally of social contacts; moreover, it would be necessary also to have systematic information as to whether the same facility in making up for lost time would appear as children grow older. In any event, findings such as these emphasize a point that frequently is not taken into account by parents and educators when they appraise the effect of this or that experience or educational practice on the behavior of children. When a change in behavior, for better or for worse, occurs in a

¹It is not here taken for granted that the more "social contacts" a child exhibits, the better off he is. Although an increase in sociability, as measured by the present techniques, usually represents a wholesome trend, his social adjustment cannot be determined simply by a tally of his social contacts, without regard for the nature of his contacts and the larger pattern of his behavior.

child after certain experiences or opportunities have been provided for him, a question should be raised as to whether the change is entirely caused by such experiences, whether such changes might not have come about in the normal process of growth without special provisions, or whether they might have been accomplished at a later age with less expenditure of time and effort in the child's behalf.

INFLUENCE OF SKILLS ON SOCIAL BEHAVIOR AND ADJUSTMENT

Mention has already been made of the fact that a child who is socially inept and who cannot join freely in the play of his fellows sometimes is so situated because he lacks the skills needed for joining in the games played by other children of his own age. Whether a child be young or old, lack of competence in the activities normally engaged in by his group is likely to affect his social adjustments.

One can repeatedly observe evidences of the ways in which a child who lacks motor skill may be barred from social participation. When his playmates dash across the playground on tricycles or down the street on roller skates he either is left behind or must follow on foot; when they climb, he is left watching on the ground. In countless ways, he is "out of it." Sometimes, to be sure, a child who is inept in the use of his limbs will make extra use of his wits in directing the play into channels where he can hold his own. Furthermore, lack of motor skill will have varying effects in the case of different children; some seem to get along quite well either by contentedly taking the role of an onlooker or by devising substitute activities that seem to satisfy them. The fact that skill in everyday games and occupations is generally very important does not mean that every child, in order to be well adjusted, must be a robust athlete or a skillful jack-of-all-trades. It can be noted, however, that children who, because of parental overprotection, lack of opportunity, or for other reasons, lose their stride in activities and skills which they actually could master frequently will react in

ways that are not particularly advantageous to their development. They may exhibit timidities and fears where other children are well at ease; they may seek the companionship of younger and less stimulating companions; they may stay away from club meetings, parties, or other get-togethers that happen to call for a display of skills in which they are deficient; or they may become the butt of teasing and ridicule.

The condition in which such a child may find himself is exemplified by a ten-year-old boy whose behavior was studied in connection with an investigation conducted by the writer and his associates in which records were made of the behavior of children in several elementary-school classrooms. It was noted that, while the class was in session, this boy talked far more than anyone else. Although he talked much, he was not as well informed as were many of the other children, and on objective tests of competence he made a rather poor showing. A further study of his behavior indicated that there was quite a discrepancy between the facility with which he used his tongue and his skill in using his arms and legs, although he was in good shape physically. He stayed away from play activities as much as possible, and so lagged progressively farther behind his companions. His tendency to talk so much in class did not gain him any popularity in the classroom; on the playground, he was awkward, and, in addition, he came to be singled out for persecution by some neighborhood boys. Partly, so it seemed, as a retreat from these conditions, he constantly made a bid for the attention of his teacher, during class and during recess. In a case such as this, it is difficult to draw conclusions regarding cause and effect, but at any rate, this child showed a considerable degree of lop-sidedness in his behavior, and his deficiency in everyday skills, however this deficiency may first have started, was associated with a good deal of social maladjustment, at least for the time being.

Changes in Social Behavior. The way in which a gain in proficiency in handling a situation may influence a child's role in social dealings with others is provided in an investigation by Jack (8).

First, a number of children were studied to note their tendency to be ascendant or nonascendant in their relations with others. A child's ascendancy or nonascendancy score was computed on the basis of the number of times he exhibited behavior such as the following: verbal attempts to secure play materials; forceful attempts to secure play materials; success in procuring play materials; efforts to defend or retrieve possessions; attempts to direct the behavior of a companion; directing or supplying a pattern of behavior for the companion to imitate; and criticisms, reproofs, and interdictions directed against companions. Five children who were found to be least ascendant were chosen for special study.

These children were helped to achieve competence in certain performances. One performance involved the construction of designs in fitting mosaic blocks into a cardboard frame; in another, the child learned to fit together the parts of a picture puzzle; in a third, the experimenter read a story to the children, and after the story had been told three or four times, the child was invited to join with the experimenter in telling the story until he could tell it alone. After the children had become competent in these activities, each of the five children was observed when paired with other children while dealing with these materials. The five children showed a distinct change in their relations with their companions following the period of training. They now considerably more often showed a tendency to lead, to assert themselves, to direct the other child, and to exhibit "ascendant" behavior than in the initial series of observations. In other words, the competence which the children had acquired not only increased the children's success in the skills which they had mastered, but also modified their relationships with other children.

In everyday life, situations frequently arise in which an adaptation of the techniques used by Jack (8) and later applied in a study by Page (22), might be used in practical ways. The value of special coaching, help in acquiring skills that are useful in social intercourse, and help in overcoming handicaps that have arisen through lack of opportunity or faulty procedures is frequently

demonstrated in the practical experience of parents, teachers, playground supervisors, and camp counselors (20). Indeed, the practice of helping children to improve their social adjustments by means of improved competence in big or little undertakings is used extensively by many persons who come to take the techniques and the outcomes more or less for granted. It would be highly instructive, and valuable from a practical point of view, if experiences in this area could be made more articulate and if a systematic compilation could be made of techniques that have been used in different situations with varying degrees of success.

Apart from active attempts to promote skills of various sorts, another procedure which teachers often find useful is to encourage a child to exercise special abilities and talents which he already possesses. A child who habitually is on the fringe may rise and shine when an adult recognizes the light which the child hitherto has hidden under a bushel or sponsors group projects that give the child a chance to show qualities that are not called for in the group's ordinary run of activities. Again, it has been found that a child who is overwhelmed or is shy and retiring in his customary group contacts may find his stride if transferred for a time to a new group or if placed for a time in a group in which the pace is less trying. Sometimes a child becomes resigned to an unimportant role, and the group comes to take for granted that he is a shy "fringer," so that he occupies this role more from force of habit than from lack of potential ability.

A study by Lowenstein and Svendsen (17) provides interesting findings concerning thirteen children (aged six to ten years) who were shy or withdrawn and who exhibited other symptoms of maladjustment. These children were sent for a period of several weeks to a small farm camp, where there were no other children. It was observed that, at first, the children played alone; then, in time, they played in small groups; and as time went on, they played in larger groups. As this change occurred, the children also became more disposed to assert themselves and to be more aggressive, and there was a decline also in other specific symptoms

of maladjustment that had been associated with their shyness. From information obtained in a follow-up study it appeared that of nine children who returned to their earlier home environment, five showed distinct improvement, as compared with their former status, and one showed partial improvement. Four children who did not return to their old environment but to a new situation showed improved adjustment.

Recognition of the importance of skills does not, of course, rule out the importance of other factors. Children may be quite similar in their skills and achievements and still be quite different in their adjustments to other persons. When a child joins a group, he carries with him many attitudes and habits which he has learned at home (7). If feelings of jealousy, rivalry, and hostility have been prominent in his life at home, these may also influence his behavior toward new companions at school or on the playground.

INFLUENCE OF PLAY EQUIPMENT AND ADULT PATTERNS OF BEHAVIOR

As one would expect, any number of conditions in the surrounding environment may have an effect on children's social behavior. Updegraff and Herbst have shown, for example, how the amount of talking children do and the extent to which they coöperate will vary with different play materials (26).

An interesting account of the manner in which children's play may be influenced by the environment is offered in a study by Salusky (24) of two groups of kindergarten children in Russia. One of the groups was located in the center of an industrial city. The parents of these children exemplified the "new" mode of life: there was little religion in the home; revolutionary holidays were observed; and family life was unconventional, as compared with the past. The other group of children attended a kindergarten on the outskirts of the city; the parents of these children were less prosperous and conformed more to the "old" mode of life in the matter of religious observances and customs. These differences

between the home backgrounds of the two groups were reflected to a marked degree in the social play of the children. The old mode of life appeared in forty-nine per cent of the games in the latter kindergarten, as compared with only 6.3 per cent in the former. In the more modern group, in contrast, the children played games reflecting the communal household, revolutionary modes of life, and depicting the revolution. Apparently, ways of life which the more "modern" parents had more or less consciously adopted were transferred spontaneously into the play of the children. The results here are suggestive of the manner in which customs, standards, and ways of thinking and living which adults deliberately adopt or conform to may be injected into the thought and action of young children. However, to discover the extent of the influence of the new mode of life on the play of the children, it would be necessary to study the situation more intensively to find whether their play involved real changes in social relationships or served merely as a general framework for much the same forms of coöperation and competition, snatching and sharing, dominance and submission, aggression and sympathy, as appeared in the play of the children who imitated the old mode of life.

INFLUENCE OF ADULT DIRECTION AND MANAGEMENT

In everyday life, it is possible repeatedly to observe the way in which children's social reactions to one another can be influenced by the kind of direction they receive from adults who are in charge of the group. One teacher, for example, manages much better than another to promote coöperation and camaraderie. The adult influences that affect children's social relations may range all the way from subtle and relatively intangible factors to quite concrete practices and policies. Fite has described how a teacher may betray her attitude toward a given child in her group and, in effect, give tacit consent to other children's attacks on a particular child (4).

In a study of children aged two and a half to eight and a half years, Johnson studied the relative effectiveness of a large number

of types of verbal requests, remarks, and prohibitions; she found that specific and simple instructions were more advantageous than general and verbose instructions, that requests that had a pleasant tone were more effective than scolding, that positive prohibitions were more effective than threats, and that unhurried directions brought better results than hurried directions (13). Observations reported in the study by Osborne, cited above, show how the attitude of camp counselors toward various activities may influence children. When the boys in this study first came to a summer camp, their indicated game preferences conformed to the conventional notions as to what a robust ten-year-old child should like to do; but within a short time, under counselors who were not bound by stereotyped ideas as to what children should do, many of the youngsters joined in forms of play that, under other circumstances, they might have regarded as "sissyish" and eventually applied a high degree of skill to such games.

The fact that children respond more favorably to an adult who identifies himself with their concerns and is pleasant in his dealings has been observed repeatedly in everyday life, as well as in research studies (11).

In an experiment by Lippitt (16), comparisons were made between children's responses to "autocratic" and "democratic" management of small clubs with five members. It was noted that, as time went on, the children who were treated in rather peremptory ways exhibited considerably more aggressive domination in their relations with one another than did the children with whom techniques of a man-to-man character were used. Expressions of hostility, resistance, demands for attention, hostile criticism, and competition were more than twice as frequent in the former group. In the "authoritarian" groups, the relation of the children to the leader tended to be one of submission or of frequent demands for attention, while the relations between the children and the adult leader in the "democratic" group were more free, spontaneous, and friendly.

This line of experimentation was carried further in a study re-

ported by Lewin, Lippitt, and White (15). Three types of adult direction were used in connection with such activities as mask making, mural painting, soap carving, and model airplane construction. The "authoritarian" leader was dictatorial; he decided everything that was to be done, one thing at a time; he was "personal" in his criticism and praise; and he remained aloof, without actively participating in the work of the group, except when demonstrating (a skillful autocrat would, of course, use more subtle techniques). The "democratic" leader permitted group discussion and group decisions within the broad limits of the experiment, allowed more freedom, participated actively as a regular member, and was "objective" in his praise and criticism. The *laissez-faire* leader allowed complete freedom, did not participate in the activity or discussion of plans, and made infrequent comments on the activities of the club members. The same leaders variously applied the three types of direction with different groups, so that the factor of the personality of the leader was controlled as far as possible.

One of the groups under autocratic management again showed considerably more aggressiveness than did groups with democratic management, while other children who were handled autocratically reacted by showing a good deal of apathy. However, also in an apathetic group it was found that, when the autocratic leader left the room, there was a sharp rise in the amount of aggressiveness shown by the children.

In response to interviews, nineteen of the twenty boys stated that they liked the leader in the democratic setting better than the leader in the autocratic setting; the one exception was a boy who liked the leader because he "was the strictest." According to their own accounts, in seven cases out of ten, the children preferred the *laissez-faire* leader to the autocratic leader.

On two occasions, following the deliberate intrusion of an adult who criticized the work of the children, fighting broke out immediately afterward between children who happened to be sharing the same room at the time. Among the factors that appeared to

increase the tension in the autocratic groups were the higher frequency of directions given by the leader—which, in effect, put more pressure on the children—restrictions of freedom of movement,¹ and greater rigidity of the group structure. The authors also point out that the response to such tensions and restrictions is likely to be influenced by the background of the children's behavior.

Variable Effects of Different Practices. An adult may, of course, use tactics that will cause irritation no matter what the general philosophy of his approach to a child might be. However, by reason of the complexity of the relationships between adults and children, no definitive formulation can be made concerning the manner in which this or that adult practice or policy will affect the child. By way of example, even though suggestions are likely to work better than peremptory commands and even though a preponderance of praise for work well done is likely to work better than a preponderance of reproof, this does not mean that the reverse balance will always have bad effects. In the study by the writer and his associates referred to earlier, note was made, among other matters, of the number of "positive" attentions (praise, acknowledgment, recognition, smiles, and so forth) and "negative" attentions (explicit or implied reprimands, invidious comparison, reminders of past shortcomings, vocal or silent reminders that an answer was wrong or unacceptable, and so forth) which pupils received from their teachers. The records of one of the four teachers in the study showed a conspicuously larger number of "negative" than "positive" responses as compared with three other teachers, two of whom showed a higher ratio of "positive" responses. Yet, in no other class was there more evidence of pupil respect and fondness for the teacher and of pupil coöperation. In addition, even though the pupils definitely "toed the mark" when corrected or reprimanded, the general atmosphere

¹ As noted in an earlier section dealing with children's conflicts with one another, it has been observed that the restriction of movement brought about by smaller play space, quite apart from the factor of teacher interference and direction, is associated with a larger number of altercations between preschool children.

of the class was one of freedom and enjoyment, as revealed by instances of laughter, byplay between pupils and teacher during free moments in class and especially during recess, and signs of interest and enthusiasm. One factor that contributed to the high frequency of "negative" responses by the teacher was the comparatively large size of the class. In order to get the day's business done during periods when all children worked on a common project, it was necessary to move swiftly; there was not time to cajole and "draw out" the pupils who obstructed the work of the class or to praise every good effort. The pupils themselves seemed to recognize and appreciate this need for dispatch. The teacher's basic fairness, efficiency, and approachability counted for much more than the mere fact that there was a preponderance of "negative" over "positive" remarks.

CHILDREN'S RESPONSE TO OPPORTUNITIES FOR SELF- GOVERNMENT

During recent years, many schools have adopted the policy of imposing less adult regimentation than has usually prevailed in the traditional classroom and of affording children more opportunity for self-direction. Obviously, to measure the effects of "newer" as compared with "older" educational practices in this area is rather difficult, since so many variables are at work. Among other things, it has been noted that the outward forms of "democratic" and "autocratic" management in a classroom are often quite deceptive. One teacher may conform to a superficial pattern of "pupil self-rule" and yet, in devious ways, dictate all the decisions that are made. On the other hand, as can be observed in classrooms and as many adults will confirm from recollections of their own school days, a teacher may outwardly appear to carry on in the style of an old-fashioned schoolmaster, while actually the relations between teacher and pupil involve a high order of freedom, spontaneity, and friendly give-and-take. Indeed, so important is the personality of the teacher, and especially the teacher's responsiveness to pupils as fellow human beings,

that an adequate measure of the effects of newer educational practices cannot be obtained simply by comparing the behavior of pupils in avowedly "democratic" or "progressive" schools with that of pupils in "traditional" schools. It is possible, however, to detect certain trends in findings based upon gross comparisons between officially "progressive" and "traditional" classes. In a study that was initiated by the Board of Education of New York City, comparisons have been made between a number of schools that officially had adopted an "activity" program (designed, among other things, to promote democratic methods in class management, more pupil self-direction, more freedom on the part of pupils to express and exercise their interests, more opportunity for pupil initiative, less confinement to conventional textbooks, more opportunity for projects designed to integrate subject-matter learnings in a functional way, and so on) and a number of "control" schools that followed more conventional procedures.¹

Among other matters, a study was made of certain "social-performance" factors by means of systematic records made by observers who regularly visited the classrooms. Table XVIII shows the results obtained when a tabulation was made of the frequency of behavior in various categories. As pointed out in the article from which this table is reproduced, the procedure in the study was to have a single observer try to record the behavior of an entire class. However, since no human being is able to keep an eye and ear on so many different forms of behavior in a large classroom, the underlying data do not give a reliable portrayal of the behavior of individual pupils; but the measures of reliability did indicate that the data can be used for "gross comparisons between large groups," such as are shown in Table XVIII.

From this table it can be seen that the pupils in the classes into which newer educational practices had been introduced far surpassed the "control" pupils in frequency of *self-initiated activities* (*e.g.*, in connection with a study of the Chinese people, a pupil on

¹For an initial report of the scope of this study and of the preliminary methods of investigation, see Wrightstone, *et al.* (28). For a report of findings obtained during the first five semesters of the study, see Jersild, Thorndike, Goldman, and Loftus (11).

TABLE XVIII

COMPARISON BETWEEN THE AVERAGE SCORES OF CHILDREN IN
 "ACTIVITY" AND "CONTROL" SCHOOLS, BASED UPON
 RESULTS FROM FIVE SUCCESSIVE TERMS¹
 (Critical ratios are shown in parentheses.)

	Spring 1937 (32 Classes)	Winter 1937-1938 (40 Classes)	Spring 1938 (48 Classes)	Winter 1938-1939 (36 Classes)	Spring 1939 (32 Classes)
Coöperative Activities:					
Activity.....	10.68	10.15	12.25	13.67	14.76
Control.....	10.38 (.13)	11.40 (-.65)	13.46 (-.82)	11.56 (1.07)	11.70 (1.19)
Critical Activities:					
Activity.....	12.56	11.00	12.08	14.45	18.72
Control.....	6.76 (2.58)	7.05 (2.17)	7.00 (3.22)	8.34 (2.62)	9.12 (2.86)
Experimental Activities:					
Activity.....	13.76	13.92	24.72	27.20	24.29
Control.....	10.00 (1.19)	11.15 (1.14)	14.90 (4.04)	15.44 (4.49)	13.23 (3.71)
Leadership Activities:					
Activity.....	3.47	2.17	1.89	1.44	1.87
Control.....	3.18 (.29)	.49 (5.09)	.60 (4.61)	.32 (4.57)	1.09 (1.56)
Recitational Activities:					
Activity.....	44.20	37.80	37.36	40.30	40.24
Control.....	56.60 (-1.41)	71.50 (-4.04)	70.70 (-6.31)	76.04 (-5.65)	63.84 (-4.70)
Self-Initiated Activities:					
Activity.....	12.13	13.00	13.48	14.76	12.50
Control.....	6.63 (3.29)	5.25 (4.59)	6.06 (5.62)	5.00 (5.25)	6.32 (3.19)
Negative Work- Spirit Ac- tivities:					
Activity.....	4.88	3.00	1.73	2.09	2.00
Control.....	3.94 (.90)	2.60 (.49)	1.88 (-.38)	1.73 (-.59)	2.38 (-.37)

his own initiative collected information from several books and newspapers that were not assigned to the class); *critical activities* (e.g., criticizing, praising, or challenging the work of others by bringing out strong or weak points, suggesting improvements, and so forth); *experimental activities* (trying out new things or putting things into new combinations, as in constructing a workbook, working out a story, constructing a chart, and so forth); and *leadership activities* (organizing, directing, and controlling combina-

¹ From Jersild, A. T., Thorndike, R. L., Goldman, B., and Loftus, J. J.: "An Evaluation of Aspects of the Activity Program in the New York City Public Elementary Schools," *Journal of Experimental Education* (1939), 8: 166-207. Reproduced by permission.

tions of persons, setting up a plan of procedure for a group to follow, and so forth). The two groups were about equal in *frequency* of *coöperative activities*, a category which included acts such as helping other pupils or the teacher with a problem or project; however, when anecdotal records of behavior were rated for quality, it was found that the pupils in schools where the newer practices were in effect consistently received higher ratings in co-operation than did the "controls." As one might expect, the "controls" engaged in decidedly more *recitational activities* (consisting largely of brief responses in the conventional question-and-answer type of recitation).¹

The category representing *negative work spirit* is rather inconspicuous in Table XVIII, but the results in connection with this category are highly interesting. Under this heading were tallied instances of conduct such as talking to a fellow pupil when attention should be directed elsewhere, untidiness, irresponsible conduct when the teacher was not near or was out of the room, littering the floor, depending upon unnecessary help, idling when there was work to be done, and so on. The scores of the classes in the experimental and control schools were practically the same in this category, but, as the authors of the study point out, this in effect represents something of a triumph for the newer educational practices. Under an educational regime that allowed more freedom of action and, correspondingly, relatively more opportunity to commit acts that would fall into this category, the children did not abuse their privileges, but rose to the occasion in a responsible way. To be sure, a complete measure of children's self-discipline would require more accurate records than those obtained in this study, but the quantitative findings, as far as they go, agree with testimony from other sources on this point. Indeed, special note was made of the fine manner in which the pupils in many classes responded to opportunities for greater self-direction; there was no

¹ While the "activity" classes thus scored higher on certain "social performance" factors, the "control" classes made a better showing than did the "activity" classes in tests of academic achievement (notably arithmetic and spelling) during the later semesters of the study.

general tendency on the part of the pupils to abuse the greater degree of freedom and opportunity for self-discipline which the 'activity' classes seemed to afford. Rather it appeared that children were more able to take responsibility for their own conduct than is implied in the customary disciplinary practices found in the conventional classroom. The report also points out that, on the basis of informal observation (in schools located in a poor section of the city), it appears that "a surprising degree of coöperation between pupils and teachers, with a minimum of school-masterish discipline, can be established in classes that contain pupils who at first glance would seem most unpromising." Obviously, more intensive study would be required to test this generalization in a variety of situations, to define ways in which outcomes may be affected by varying conditions and factors, and, among other things, to define some of the circumstances under which a considerable amount of adult direction, as distinguished from situations in which a minimum of adult direction, best serves the child's welfare.

Democratic Management as Related to Democratic Practices in the Relations Between Children. In both of the studies cited above, concerning the response of children when adults endeavor to apply "democratic" principles, the results have been quite favorable. It should not be concluded from findings such as the foregoing, however, that, as children are freed from adult regimentation, they forthwith proceed to be thoroughly democratic in their dealings with one another. On the contrary, it has been observed that, under some circumstances when children are freed from adult direction, a few proceed to take command of things, while many members of the group play a subordinate or passive role. In a study by the writer and his associates, records were made of pupil participation in class discussions and recitations when the class was under the direction of the teacher and when it was under the direction of a pupil chairman elected by the group. When the teacher was in charge of the discussion, a few children invariably tried to pre-empt most of the talk, but this condition was aggra-

vated when the discussion was under the direction of a pupil chairman. In one class of forty-eight pupils, for example, when the teacher was in charge, the amount of talk pre-empted by the most demanding child equaled the combined contributions made by eight of the least voluble children; under the chairmanship of a pupil, the most voluble child talked as much as *eighteen* other children combined. This high amount of participation was not achieved by virtue of silent consent on the part of the rest of the class; rather, as usually is the case when a class is in action, many other pupils were constantly striving to get a hearing but failed to match the resources of the inveterate talker.

It would require more study, under a variety of conditions, to determine to what extent this trend is characteristic of school situations in general. Furthermore, it is possible that a more equal distribution of participation would be accomplished if, from the beginning of their school career, the children had more opportunity to manage their own affairs. However, when we take children as we find them at the preschool level and through the later years, it does not appear that their response to opportunities for self-direction will be to put into effect a policy of share and share alike, equal opportunity to voice assent or dissent when decisions are made, or an equal chance to win honors and emoluments. What often seems to happen is that as adult direction is withdrawn and children are left more to govern themselves, the increase in forms of behavior such as those studied in the investigation reviewed above (initiative, leadership, experimentation, critical activities) may take place, not so much by virtue of a general rise in the level of the performance of the group, but rather through an increase in the assertiveness of a few children. The group *average* of certain seemingly desirable forms of behavior may rise, but much of this increase in the average may be contributed by a few children. Indeed, on occasion, gains may be made, not because of a general flowering of initiative and other presumably desirable forms of behavior, but at the expense of a large number of unassertive children, who recede more and more

into passive, spectator roles as the more dominant and volatile children, freed from adult restraint, forge ahead to assert their demands and to impose their own interests upon the group. Education for democracy is sometimes spoken of as something requiring the withdrawing of adult direction from the training of children. Actually, it appears that training in the practices and attitudes of a democratic mode of life requires as much, if not more, adult direction, wisdom, and resourcefulness as does training of a sort that leads to undemocratic patterns.

CHILDREN AS DISCIPLINARIANS

An important part of a child's upbringing comes through the discipline imposed by other children. In many ways, the rules, customs, and codes of his fellows, oftentimes quite inarticulate, will mold a child's conduct where parents and teachers have failed. These influences assume both a positive and negative form. On the positive side, the mere fact that his fellows behave in certain ways serves as a stimulus and guide to the child's own conduct. This fact facilitates countless details of daily regimentation and discipline which are similarly imposed upon all children.

Quite as powerful, in individual cases, may be the negative forms of discipline by other children. Impatient glances from several children who want to hear what the teacher is saying may have more weight than a rebuke from the teacher; the opprobrium that comes from cheating in games may have more weight with the child than any amount of sermonizing by parents and teachers. Similarly, pressures may be brought to bear on a child who is hot-tempered and throws stones in a fight, or one who is a "cry-baby," or one who is inordinately selfish, given to boasting or showing off, or one who is unduly finicky and capricious in his tastes, or overanxious regarding his health and safety. By virtue of such discipline, one often finds children who show much more fortitude and better manners when they are with other children than when they are at home.

The group sometimes makes a child suffer for the mistakes

of others, as when a child who is overprotected at home is "picked on" and teased by his fellows. Such a child may find himself in a difficult situation. If he disobeys or resists at home, he is in trouble there; if he conforms to wishes at home, he is in trouble with his playmates. When a child is "picked on" by his fellows, there often is a good basis for it; the child (and his parents) are getting some good instruction free of charge, and parents may do a child a disservice if they endorse his complaints against his disciplinarians. The wise thing, of course, would be for parents to inquire into the situation as dispassionately as possible and to govern their conduct accordingly; but this attitude is often difficult to achieve, not only because the parents' first impulse is to take their child's part, but also, at times, because of the fact that the very features in the child that arouse others against him may stem from characteristics in the parents which they themselves are either unable to discern or unwilling to admit.

There are many occasions, however, when the pressures brought to bear upon a child by his group may be quite unfair and unwholesome. The child may get into trouble by reason of failure to conform to bad standards, as when he is pressed to join in stealing or destruction of property. Again, he may be subject to unjust attacks by neighborhood bullies. Sometimes the child's own behavior is not at issue, as when he is persecuted because of prejudices regarding race, religion, political affiliations, wealth or poverty, family background, and other factors.

In like manner, a child may be the butt of abuse from his fellows by virtue of his superior qualities. Thus, a child who is very bright and who is promoted a grade or two above his peers may be persecuted because of envy (although such persecution is not inevitable, and, unless the child has unpleasant qualities that would make him the object of attack anyhow, the persecution is likely to abate, unless fanned by rivalry and resentment among the children's parents). If a child can face such gratuitous persecution and still, by his own good qualities and ingenuity, win and hold the esteem of his fellows, it is all to his credit; and the

experience, although temporarily unpleasant, is likely in the long run to be a very salutary one. But if the odds are too strongly against him and he is bound to suffer defeat, or if he is persecuted by virtue of qualities that reasonable persons would admire and that will be of value to him, it would serve him better if he could move to a more congenial environment.

The tactics used by children in "bringing up" their companions or in trying to rub out characteristics of which they disapprove frequently, as noted above, create a difficult problem for adults. On the one hand, if adults inject themselves into the situation, it often means that the child who already is having a hard time will be teased and taunted more than ever. On the other hand, conditions may become so acute that the child who is being disciplined is quite at a loss. On the basis of observations of children in summer camps and in play groups, Osborne has offered a number of suggestions as to ways in which adults may help a child to adjust in a group situation (21). He points out, among other things, that children may be quite intolerant of a newcomer who is not versed in the games and customs of a group and who is unfamiliar with the roles occupied by various members of the group. He also shows how an adult may act as a *buffer* for the inexperienced child, for instance, by suggesting activities that are of interest to the group but which are calculated to ease the way for the inexperienced child; by helping a youngster to acquire specific skills that facilitate his adjustment to the group and obviate handicaps that might cause him to be rejected or derided; or by suggesting activities that may give to a child who has been an outcast a chance to work effectively with a group and, through this, to be accepted by the group. As an example of this he cites the case of a fat, clumsy ten-year-old boy, who was called a "sap" by all of his associates and who had a rather hard time of it, until the adult discovered that this "sap" was very resourceful and handy in constructing things out of odds and ends of building materials. Through the direction of the leader, the boy for a time had a leading place in the group, even though his talents in build-

ing did not entirely overcome handicaps in other activities. Further observations by Osborne indicate that the very children who are most aggressive in rejecting or making a scapegoat of a playmate will sometimes, as a result of adult suggestion, accept the challenge of trying to help the scapegoat overcome the difficulties that cause him to be rejected or abused. It appears that the self-assertiveness which children show in "bringing up" other children can often be led into constructive, rather than destructive, channels. According to Osborne's observations, adult leadership of this sort must be exerted indirectly by way of the interests and activities of the children themselves, rather than by way of general precepts and exhortations. Efforts of adult leaders to help children who are isolated or ignored may succeed better when the adult can get a child who already is a leader in the group to help and "sponsor" the isolated child (12).

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CHAPTER VIII

EMOTIONAL DEVELOPMENT: INTRODUCTORY

It is only by being somewhat arbitrary that the subject of emotions of the child can be treated as a separate topic, for there is no such thing as an emotional entity that flourishes by itself and that may be considered apart from other aspects of the child's behavior. Likes and dislikes, fears and resentments, and all manner of emotional responses, are interwoven with the child's social behavior, his relations with other people, his private interests and attitudes, his ambitions for the future, and all of his daily activities. It is possible, however, to single out for separate treatment some of the phenomena that fall under the heading of emotion.

When we try precisely to define emotions, to distinguish them from each other, we run into difficulty. Although precise definitions and distinctions cannot be made on the basis of available information from laboratory studies,¹ observations of children, and introspective reports by adults, the fact remains (fortunately, for one who presumes to write on the subject) that, when we speak of emotion in such terms as anger, fear, and joy, everyone knows pretty well what we mean. Likewise we can describe certain characteristics of emotional experience as it occurs in everyday life. On the subjective side, emotion involves various nuances of feeling, as when we report that we feel angry or feel afraid. Also on the subjective side, an emotional experience involves an impulse or disposition to act in one way or another, as to attack in anger, to flee in fear, to approach and seek to prolong the circumstances that cause joy. Furthermore, emotion involves, to varying degrees, physical and physiological phenomena. Some of these

¹ For a review of laboratory studies dealing with measurements of bodily phenomena associated with emotion and theoretical discussions of the topic, see Cannon (1, 2, 3, 4), Cantril and Hunt (5), Dunbar (6), Goodenough (8, 9), Jersild and Thomas (11), Landis (14), Landis and Hunt (15), and Ruckmick (17).

may be expressed quite obviously; some may be quite apparent to the individual himself and be less obvious to others; and some can be detected only by after-effects or by precise laboratory instruments or chemical analysis of gastric juices, urine, and blood.

EARLY SIGNS

Just what, if any, are the emotional experiences of the newborn, no one, of course, can tell. As described in the first chapter, one method of study has been to observe what the infant does in response to conditions that presumably might produce an emotional response, such as being kept beyond the usual feeding time, having movements interfered with, receiving food, being subjected to lights and accidental noises, being removed from the mother's breast, being pinched or pricked, being dropped through space, and so forth.

Another method of studying the emotions of the infant has been to probe the childhood memories of adults. The examiner directs the person to recall his early experiences and to help the process; he may try, by various means, to get the patient to resurrect memories of the past and to revive experiences which the patient may have forgotten or repressed. It has been claimed that experiences going back even to the first day of life have been revived. It is possible that this may be true (since the seemingly impossible sometimes does happen), but the authenticity of testimony of this kind is open to question.

Judging solely from overt behavior—cries, movements, and facial expressions—it appears that an infant's emotional responses are quite diffuse and generalized, just as his behavior as a whole tends to lack the organization and specificity which appear in time. Likewise, judging from bodily response, as noted in an earlier chapter, it would appear that the infant's "feelings" are in some respects less sensitive than they will be at a later time. Even when a child does react to a stimulus calculated to produce an emotional response, the response may fail to show any clear-cut or uniform pattern that observant adults can identify (18). As a child grows

older, his expressions become more clearly differentiated and distinguishable. In a study by Goodenough (9) it was found that adult judges showed more accuracy than could be expected by chance when asked to identify pictures taken of a ten-months-old child who, at different times, had been exposed to stimuli designed to provoke fear, astonishment, satisfaction, anger, and the like. There remains the question, however, as to the degree to which facial expressions of emotions are native or are influenced by learning. The vocal aspects of the infant's emotional behavior also assume more definite expression after a time. At the age of one month, he will give different cries for hunger, pain, and discomfort (7). At three months, he will smile at the approach of a person and give vocal expression to apparent feelings of pleasure (7).

In the case of the newborn, as in the case of older persons, we cannot conclude that failure to show a clear-cut overt response to stimuli that in time become disturbing also means the absence of feeling; but suggestions such as these above, however limited they may be, are nonetheless instructive, and they must be taken into account before we adopt any theory which attributes to the newborn child a capacity for profound emotional experiences. To be sure, the child's responses to external irritations may give little indication of the manner in which he may be affected by internal conditions. If one were somewhat romantically inclined, one could readily conjecture that the newborn child is fairly seething with emotion. He has just been precipitated into a strange world of new sights, sounds, smells, tastes, and changes in temperature. He has been evicted from the warm protection of the womb. One might conjecture for example, that, when his nourishment is delayed, there arises in him an overwhelming state of apprehension and fear, for his very existence depends upon getting something into that little stomach. One might conjecture also that his physical contacts with his mother are suffused with feeling, that he experiences a warmth of well-being through these contacts, and that he is acutely affected whenever he is taken

away from his mother's breast and the protection of her arms.¹ To attribute such intense emotional experiences to the infant during the first days of life seems quite implausible on the basis of objective evidence concerning the child's overt behavior and his neural development, but since this feature of the child's experience is so inaccessible and so little authentic information concerning it is available, no definitive conclusions can be drawn. It is possible, however, to make some conjectures regarding the child's earliest experiences.

For one thing, the world of the infant is obviously a rather small and confined one, and some events are relatively more prominent in his daily life than will be the case at a later time. Where the world of an older child encompasses what is near at hand and far away, where the older child's thoughts embrace not only the present but also memories of the past and plans for the future, where the older child may have a thousand things that interest and occupy him, the little infant, by contrast, dwells within small confines, featured by a few events—such as hunger contractions and the getting of food; the tactual contacts involved in being nursed, cared for, and being put to bed, the circumstances of falling asleep and awakening; and, while awake, of being confronted with the limited range of stimuli that pass within the purview of his still imperfectly developed senses. Just what is the nature of a child's impressions and his feelings in connection with these events no one can tell, but it is likely, as pointed out in an earlier chapter, that certain events, including hunger and the receiving of food, and physical contacts with other persons, loom relatively much larger in the experience of the young infant than will be the case at a later time.

The development of emotions during infancy and childhood, as

¹The view that the infant, from the beginning, is subject to profound emotional experiences is set forth by Isaacs, who maintains that the quite young infant has powerful wishes and feelings and fantasies, and that these have all the stronger hold on him because his power of making them effective is as yet so feeble. "Far more goes on behind those wide-open infant eyes than most people imagine. Knowledge is lacking, understanding has not yet begun; but wants and wishes, fears and angers, love and hate are there from the beginning." (10).

we have already stressed, is closely interwoven with other aspects of development. As a child's senses become more acute, as his capacities for discrimination and perception mature, and as he moves forward in all aspects of his development, the range of events which may elicit an emotional response grows wider and wider. With the growth of the child's understanding and imagination, the things that affect him emotionally become increasingly involved with symbols and fancies, with abstract plans and values; the child becomes concerned not merely with the immediate and passing event but with events that have occurred in the past and with what may happen in the future. In the expression of emotion, there likewise are changes paralleling the child's mental and emotional development. As noted earlier, a child's movements become more specialized as he grows older, and, to some degree, there is a corresponding specialization of his emotional expressions and experiences. Moreover, as the child grows older and more able to suit his actions to his impulses, he also becomes more capable of suppressing outward signs of stress and of giving vent to his emotions in indirect or subtle ways.

PHYSIOLOGICAL ACCOMPANIMENTS OF EMOTION

As already noted, physiological changes constitute an important feature of emotional excitement. These changes have been found by Cannon and others to be related to the functioning of the ductless glands, notably the adrenals in the case of rage and fear. Among the physiological phenomena of emotional excitement, as described by Cannon (1), are the following: the heart beats faster; the systolic blood pressure rises; glucose stored in the liver is released into circulation; the blood supply is distributed in greater volume to the skeletal muscles and in smaller volume to the digestive tract; the stomach stops churning; there is diminished secretion of gastric and salivary juice; the bronchial tubes dilate; there is increased resistance to fatigue, an increase in white corpuscles; and so on. Changes of this kind, many of them calculated to increase muscular strength and endurance, serve what

Cannon has called an "emergency" function by mobilizing energies for fighting or fleeing in the struggle for existence. To be sure, in an adult, all of these symptoms will not invariably be found in an emotional seizure. The response may vary, not only as between different individuals, but also within the same individual at different times or under varying circumstances. Be that as it may, physiological changes such as those described represent an important component of emotional excitement such as occurs in extreme anger or fear, and the question may be raised as to when the machinery for such changes begins to operate in the child.

The adrenal glands, which play an important role in emotion function at birth and even before. In examinations of human embryos, Keene and Hewer (13) found that the active secretion of the adrenals was present as early as the twelfth week of foetal life. To be sure, the complete machinery for an emotional response to an external stimulus involves, not only the glands, but also the sense organs, the nerve tracts, and nerve centers. An infant's emotional response to external stimuli will not correspond to responses such as those which an adult is capable of until all nervous mechanisms involved are ready to function.

An incidental clew to the emotional responsiveness of infants is provided by studies of what is known as the psychogalvanic response. In tests of this phenomenon, electrodes connected with a sensitive galvanometer are applied to two different points on the skin. The galvanometer registers differences between the electrical potential of the two points. Such changes have been found, in adults, to occur in response to stimuli that have an emotional effect although not exclusively or always according to the same pattern. In the newborn child, the resistance offered to the passage of an electric current appears to be greater than in the case of adults (16). The psychogalvanic response is less easily aroused in early infancy than at a later time, but it has been observed by Jones (12) in infants as early as three months. The stimuli most effective in producing the response were pain, loud sounds, re-

moval of the bottle at nursing, and sudden withdrawal of support. Thus it is indicated that the underlying physiological machinery for the response is ready to function at least as early as the third month. However, in the case of infants, absence of the psychogalvanic response does not mean that the child is unaffected. Jones found that children who cried most readily frequently showed little reaction on the psychogalvanometer, and sometimes when a reaction did occur, it diminished when the infant began to cry; in other words, there was not a close relationship between inner disturbance, as far as this could be measured by the psychogalvanometer, and external signs, such as crying and bodily movements. The fact that such external signs may appear without involving changes such as those measured by the psychogalvanometer suggests, as do the quick shifts from excitement to calm, that an infant's display of emotion may be relatively superficial, without having the "depth" or involving the visceral perturbation that usually rack a normal adult when he gives way to violent outward expressions of feeling. The fact that physiological symptoms (as revealed by the psychogalvanometer) may occur in the absence of marked overt expression also suggests that, even in early infancy, there may be individual differences, just as there are individual differences in older persons, in the extent to which the child expresses his inner excitement by outer signs.

Whatever may be the condition of the infant's physiological machinery during the days and weeks following birth, not many months pass before infants exhibit symptoms of emotion resembling those shown by adults. A counterpart of the dry mouth and indigestion which adults frequently experience after a wave of excitement can be seen in the regurgitation, refusal of food, and the digestive upsets which many children display before the age of a year after episodes of apparently violent anger or fear.

VARIABILITY OF EMOTIONAL RESPONSE

The discussion immediately following will deal with the topics of anger, fear, pleasure, and other emotional reactions. This top-

ical arrangement is convenient even though, as has been emphasized, emotional responses such as anger, fear, and pleasure are usually not clearly demarcated as distinct states; rather, in the emotional experiences of everyday life, there are countless gradations and mixtures of impulse and feeling.

In the developments following birth, as we have already seen, there is an increased differentiation of emotional response. Also, as will be illustrated in more detail, the child's emotional susceptibilities and his expressions of emotion are influenced both by learning and maturation, and, quite apart from general developmental trends, reactions will vary considerably in the case of individual children. Thus, in response to a threatening gesture by another child, one child may cringe and retreat in fear, another may bristle with anger and attack, a third may react with a derisive laugh. The individual child, as he grows older and abler, may likewise react in quite different ways to situations that ostensibly are the same. Thus a child who has joined a new school or camp may show all of the above reactions in turn. A taunt from a playmate may aggravate his uncertainties and fears during his first day in the new group; as he becomes more familiar with the situation, his response may be that of anger; later still, he may show mild annoyance by way of a laugh. As time passes, and as he comes to feel completely at home and sure of himself, he may even respond in a bantering way with a cheerful laugh.

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CHAPTER IX

FEAR, ANGER, JEALOUSY

FEAR

During infancy, a child's fears arise mainly in response to happenings in his own immediate environment. As he grows older, the range of his fears grows wider. As the child acquires the ability to dwell upon the past, and to anticipate the future, a large proportion of his fears concern remote and distant dangers, and anxieties and forebodings as to what the future may bring.

There have been various theories as to what are the original or unlearned fear stimuli. In an earlier day, there were theories to the effect that we are endowed with many instinctive fears, such as fear of animals, of the occult, of death, of large bodies of water, and so forth. As against these conjectures, for a time the theory was advanced that there are only two original, "natural" fear stimuli, namely, loud noises and sudden displacement or loss of support (30, 31). This account of fear has been found to be quite oversimplified. The circumstances that may give rise to so-called "unlearned" fears in the infant include not simply noises and loss of support, but any intense, sudden, unexpected, or novel stimulus for which the organism appears to be unprepared. Moreover, the fear stimulus cannot be described as consisting of an isolated stimulus, such as a noise of a given intensity and quality. Depending upon the condition of the organism at the time—whether, for example, it is in a state of tension or relaxation—much the same isolated noise may produce fear at one time but not at another. In like manner, a given happening may produce fear in one child and not in another. It is necessary to take account not only of the condition of the individual who is responding but also of the setting of the external stimulus. English (1), for example, describes how a loud noise that was sounded just as a fourteen-months-old child was reaching for a toy failed to arouse fear; on the other

hand, a child on one occasion, for no detectable reason, suddenly showed marked fear of a familiar pair of patent-leather shoes that were standing in bright sunlight. A noise and a sudden movement, each of which alone elicits no response, may, in combination, produce signs of fear; again, a jolt or slight displacement may provoke no response when the child is being cared for by a familiar person but may elicit fear if he is being cared for by an unfamiliar person.¹

THE ROLE OF MATURATION

The young infant is impervious to many stimuli that potentially may frighten him at a later time when his capacities for perception and discrimination have matured. An example of this was given in the chapter on social behavior. At about five or six months, as indicated in this illustration, many children show shyness and occasional distinct signs of fear at the approach of a stranger, while hitherto they have shown no such reaction. This response depends not simply on previous "conditioning" in the realm of fear alone, but also upon factors of added mental maturity which render the child responsive to events that did not register on him at an earlier time.

The fact that the tendency to respond to an event as actually or potentially dangerous is relative to the child's level of development has been noted in many studies (10, 17). Gesell (6) describes the response of infants at different ages to confinement in a small pen. At ten weeks, the child may be completely complaisant in this situation; at twenty weeks, he may exhibit mild apprehension, as betrayed by signs of dissatisfaction, "persistent head-turning and social seeking"; at thirty weeks, his response to the same situation "may be so vigorously expressed by crying that we describe the reaction as fear or fright." As the child matures, new things affect him by reason of his keener perceptions, and fear is likely to arise when the individual knows enough

¹English (1), Valentine (29), and Jersild and Holmes (10), give illustrations of the difficulty of predicting when a child will be afraid.

to recognize the potential danger in a situation but has not "advanced to the point of a complete comprehension and control of the changing situation" (Jones and Jones, 16).

In one experiment by Jones and Jones (16), a large, active, harmless snake was set free in an enclosure with persons of various ages. Children up to the age of two years showed no fear of the snake; children aged three and four tended to be cautious and hesitated to approach or touch the snake; more definite signs of fear were displayed more often after the age of four and were more pronounced in adults than in children.

The manner in which changing susceptibility to fear is interwoven with other aspects of the child's development is shown in many ways. With the development of the child's imaginative abilities, his fears become increasingly concerned with imaginary dangers; with the development of understanding of the meaning of competition and of awareness of one's own status as compared with others, there frequently come fears of loss of prestige, ridicule, and failure (10). The fears that arise at various stages of development depend, not simply upon specific past experiences alone, not simply upon "growth" alone, but upon all the complex factors involved both in experience and in growth.

SITUATIONS FEARED AT VARIOUS AGE LEVELS

Tables XIX and XX show results obtained in a series of studies of fears by Jersild and Holmes (10). The first of these tables is based upon data obtained from parents who, for a period of twenty-one days, recorded the fears exhibited by their children while under their care. The records were kept on forms prepared by the investigators. Parents representing 119 families, with 136 children, coöperated in this study; some of the children were observed during two or more twenty-one-day intervals to yield a total of 153 records. The fear situations, as described by the parents, were classified according to a number of categories that are shown in the table; these are defined and illustrated at considerable length in the original study (pages 16-33).

TABLE XIX

FREQUENCY AND RELATIVE FREQUENCY OF SITUATIONS IN WHICH CHILDREN WERE AFRAID DURING A PERIOD OF THREE WEEKS, AS REPORTED BY PARENTS

[The first column shows total number of fears reported at all age levels combined. The second and subsequent columns show the percentage of children showing one or more fears in each classification at various yearly age levels. The third division of the table shows the percentage of children at biyearly age levels (up to 6 years) who exhibited fears in each of the categories. Separately computed percentages for several categories combined are shown in italics.¹]

Age in months, Number of children	Total Number of Fears Reported	Situation in Response to Which Fear Was Shown	Percentage of Children Exhibiting One or More Fears in Each Category at Yearly Age Levels						Percentage of Children Exhibiting Fears in Each Category at Bi- yearly Age Levels to 6 Years		
			0-11 8	12-23 23	24-35 45	36-47 46	48-59 21	60-97 9	0-23 31	24-47 91	48-71 24
I. Animals (not including imaginary animals).....	3-97 153										
II. Specific objects and situations not described as strange (cause unknown).....	117		25	34.7	40	45.7	40.9	0	32.3	42.9	37.5
III. Sudden unexpected movements.....	12		12.5	8.7	8.9	4.3	0	0	9.7	6.6	0
IV. Lights, flashes, shadows, reflections.....	32		25	4.5	22.2	6.5	4.5	0	9.7	14.3	4.2
V. Sudden disappearance of persons.....	11		12.5	8.7	8.9	2.2	0	0	9.7	5.5	0
VI. Rapidly approaching or passing objects (distinct from noise).....	2		0	0	4.4	0	0	0	0	2.2	0
VII. Sudden or rapidly approaching motion plus noise.....	1		0	0	0.0	2.2	0	0	0	1.1	0
A. III-VII: Sudden, rapid motion, lights, flashes, shadows, reflections.....	14		25	4.5	13.3	4.5	4.5	0	9.7	8.8	4.2
VIII. Noises and events feared by reason of previous association with noise.....	60		25	17.4	37.8	13	9.1	0	19.6	25.3	8.3
B. VII-VIII: Noises, events associated with noise, and noise plus motion.....	157		75	60.9	55.6	37	22.7	0	64.5	46.2	20.8
IX. Falling, heights, danger of falling, sudden or gradual displacement.....	171		75	60.9	57.8	41.3	27.3	0	64.5	49.5	25
X. Pain, persons, objects, situations inflicting or as- sociated with pain and tactual shock.....	58		37.5	34.8	33.3	13	13.6	0	35.5	23.1	12.5
	82		25	52.2	20	15.2	13.6	55.5	45.2	17.6	16.7

TABLE XIX (Continued)

Age in months Number of children	Situation in Response to Which Fear Was Shown	Total Number of Fears Reported	Percentage of Children Exhibiting One or More Fears in Each Category at Yearly Age Levels						Percentage of Children Exhibiting Fears in Each Category at Bi- yearly Age Levels to 6 Years		
			0-11 8	12-23 23	24-35 45	36-47 46	48-59 21	60-97 9	0-23 31	24-47 91	48-71 24
3-97 153											
58	XI. Strange objects and situations and unfamiliar variations connected with familiar objects		25	39.1	28.9	6.5	18.2	0	35.5	17.6	16.7
92	XII. Strange active or inactive persons, queer people, masked persons, unfamiliar variations connected with familiar persons										
170	C. XI-XII: Strange objects, situations and persons		50	39.1	37.8	26.1	13.6	11.1	41.9	31.9	12.5
23	XIII. Bodily harm or danger or threat of injury (apart from falling or specific pain stimulation)		50	32.2	53.3	30.4	18.2	11.1	51.6	41.8	16.7
15	XIV. Warning or previous threat		0	0	4.4	21.7	22.7	11.1	0	12.1	20.8
96	D. IX, XIII, XIV: Harm, danger of bodily injury, falling		37.5	4.5	8.9	4.3	4.5	22.2	3.2	6.6	4.2
5	XV. Signs of fear in others		0	34.8	33.3	34.8	31.8	33.3	35.5	33	20.2
1	XVI. Danger of loss of property		0	0	4.4	2.2	9.1	0	0	3.3	8.3
7	XVII. Fears arising during dreams		0	0	0	2.2	0	0	0	11.1	0
6	XVIII. Ridicule, failure, personal inadequacy		0	0	6.7	0	9.1	11.1	0	3.3	12.5
2	XIX. Robbers, kidnappers, etc., also death and dying (no immediate danger)		0	0	0	0	0	22.2	0	0	0
24	XX. The dark and being alone in dark		0	0	0	0	4.5	11.1	0	0	4.2
19	XXI. Being alone or abandoned by parent		0	8.7	11.1	8.7	9.1	22.2	6.5	10	12.5
13	XXII. The dark or being alone plus expressed fear of imaginary creatures		0	13	8.9	8.7	9.1	11.1	9.7	8.8	12.5
16	E. XX, XXI, XXII: Dark, alone, and imaginary creatures when alone or in dark		0	0	8.9	2.2	9.1	0	0	5.5	8.3
18	XXIII. Imaginary creatures (apart from darkness or being alone)		0	21.7	24.4	19.6	18.2	22.2	16.1	22	20.8
31	F. XXII-XXIII: Imaginary creatures		0	13	8.9	2.2	13.6	11.1	9.7	5.5	16.7
89	G. XVII-XXIII: Dreams, ridicule, death, robbers, etc., dark, alone, imaginary creatures		0	13	15.6	4.3	22.7	11.1	9.7	10	25
			0	30.4	35.6	19.6	45.5	55.5	22.6	27.5	50

Table XIX shows definite age trends in children's fears, notably a decline with age in fears in response to certain tangible and immediate situations (such as specific objects, noises, falling and danger of falling, strange objects and persons, and so forth) and an increase with age in the percentage of children who show fear of imaginary creatures, of the dark, of being alone or abandoned, and so forth.

Table XX shows abridged results obtained in three different divisions of the study of which Table XIX represents one part. The first entries in the table are based upon reports by parents (as in Table XIX), plus supplementary observations by teachers, camp counselors and others (results for children above seventy-one months have been omitted because of the small number of cases). The second group of entries in the table show, in abbreviated form, results obtained in a study in which 398 children aged five to twelve years were interviewed concerning their fears. The third section of the table is based upon a classification of fears as reported by 303 adults (or persons of near adult age, ranging upward from eighteen years) who were asked to recall and describe, as best they could, their childhood fears. In general, the classification of the fears corresponds to the classification in Table XIX, with certain modifications.

Methods of studying fear such as those here described do not, of course, give exhaustive information as to the nature and frequency of fear. When parents observe and report their children's fears they may fail not only to discern occasions when the child is frightened and succeeds in disguising his fright but also to note even more obvious instances of fear. In connection with the studies here presented, it was noted in several cases that an independent observer would discern signs of fear (such as tension, trembling, shrinking, and retreat in response to a stray dog, or being lifted above ground, or being left alone in a room) which the parents had not reported. In like manner, a description by a child of his own fears or by an adult of fears recalled from childhood may reveal only the more superficial details, and a complete

TABLE XX

TRENDS IN CHILDREN'S FEARS AS REPORTED BY ADULTS FROM OBSERVATIONS OF CHILDREN, BY 5 TO 12 YEAR-OLD CHILDREN DURING PRIVATE INTERVIEWS, AND BY ADULTS WHO GAVE WRITTEN, ANONYMOUS REPORTS OF FEARS REMEMBERED FROM CHILDHOOD¹

[Separate entries are shown for children aged 48 to 71 months who were observed by adults and for children aged 11 to 12 years who were interviewed. All values represent percentages (ratio of total number of fears in each class to total number of fears reported in each group).]

Type of Fear	Fears Recorded by Adults from Observations of Children ^a		Fears Reported by Children Who Were Interviewed ^a		Fears Reported by Adults When Asked to Record Their Childhood Fears ^a
	All subjects: 0-71 months	Children aged 48-71 months	All subjects: 5-12 years	Children aged 11-12 years	All adults
Number of subjects.....	263	47	398	99	303
Number of fears reported.....	953	127	886	208	1,112
I. Animals; including animals actually encountered in the case of observed children, and these as well as remote animals in the case of older subjects who reported themselves.....	15.1 ^a	17.3	20.4	13.5	18.8
II. Specific objects and situations, cause unknown.....	1.7	.78	.45	0	1.1
A. III-VII: Sudden, unexpected movements, rapidly approaching objects, lights, shadows, flashes, reflections, lightning..	7.1	3.1	2.4	2.9	1.6
VIII. Noises and agents of noise; objects associated with noise (not including fear of sudden motion plus noise)...	20.3	9.4	3.4	2.9	3.1
VIIIa. Noises and gestures deliberately made to frighten.....	0	0	5.2	5.3	0
IX. Falling, loss of support, danger of falling, high places..	8.3	4.7	1.4	2.4	4.8
X. Pain, including persons inflicting specific painful stimulation, objects and events associated with pain, also medical treatment and medical situation, and objects associated with tactual shock.....	10.0	8.7	3.0	4.3	5.6
XI. Strange objects and situations	8.1	3.9	.22	.48	1.3
XII. Strange persons, unfamiliar variations connected with familiar persons, also queer, deformed, ancient persons, masked persons...	11.3	3.9	2.5	1.4	3.2

¹ From *ibid.* Reproduced by permission.

TABLE XX (Continued)

Type of Fear	Fears Recorded by Adults from Observations of Children ^a		Fears Reported by Children Who Were Interviewed ^a		Fears Reported by Adults When Asked to Record Their Childhood Fears ^a
	All subjects: 0-71 months	Children aged 48-71 months	All subjects: 5-12 years	Children aged 11-12 years	All adults
Number of subjects.....	263	47	398	99	303
Number of fears reported.....	953	127	886	208	1,112
XIII. Danger or threat of bodily injury through acts of persons or through situations regarded as dangerous (distinct from falling, noise or specific pain stim.); fighting, confinement, fire, dangers of traffic, drowning, etc.....	3.7	14.2	11.5	14.4	17.2
XIVa. Fear due to warnings and warnings about specific persons described as harmful.....	.73	0	.11	0	.26
XIVb. Apprehension over punishment for misconduct, fears due to unspecified disciplinary measures, fears due to apparent feelings of guilt....	.62	1.6	1.2	1.9	2.4
XV. Signs of fear in others.....	1.0	3.9	.22	0	0
XVI. Loss of property.....	.1	0	.11	.48	0
XIXa. Dying, ill health (in absence of actual malady or apart from mention of specific dangerous situation) ^a.....	.2	0	.56	.96	.3
XXIa. Loss of relative through illness or death; being abandoned by parent.....	1.8	4.7	1.9	2.9	2.1
XVIII. Ridicule, failure, apprehension over personal appearance, personal inadequacies (present or future); also fear of being presented to or of performing before other people.....	0	0	1.6	2.9	8.7
XVII. Dreams; events experienced in dreams, fear of dreaming.	1.0	3.9	5.1	5.3	1.9
XIXc. Criminal characters (in absence of actual contacts): burglars, kidnappers, etc. . .	.1	.78	9.4	5.8	4.0
XIXb. Corpses, matters connected with death, funerals, etc....	0	0	2.1	1.4	2.2
B. XX-XXII (except XXIa): Being alone or in the dark, also imaginary creatures or dangers feared when alone or in the dark.....	6.4	12.6	7.9	13.0	12.9

^a The values represent a tally of all fears, whether the same child showed one or several fears of the same class (e.g., fear of three specifically named groups of animals—such as dogs, horses, and cats—received a tally of three).

TABLE XX (Continued)

<i>Type of Fear</i>	<i>Fears Recorded by Adults from Observations of Children^a</i>		<i>Fears Reported by Children Who Were Interviewed^a</i>		<i>Fears Reported by Adults When Asked to Record Their Childhood Fears^a</i>
	<i>All subjects: 0-71 months</i>	<i>Children aged 48-71 months</i>	<i>All subjects: 5-12 years</i>	<i>Children aged 11-12 years</i>	<i>All adults</i>
Number of subjects.....	263	47	398	99	303
Number of fears reported.....	953	127	886	208	1,112
XXIII. Imaginary creatures, supernatural creatures (apart from specific mention of being in dark or being alone).....	2.2	6.3	11.1	5.3	5.0
XXIV. Characters met in or remembered from stories, movies and the radio, and specifically referred to such sources	0	0	8.2	12.5	1.1

report might require not only a good deal of prompting but also a rather full life history of the individual. Even with these limitations, the data available from systematic observations, interviews, experiments, and retrospective reports reveal many definite trends that are significant, both from the point of view of understanding children, as well as from the practical standpoint of steps that may be taken to help a child to overcome his fears.

Table XXI shows findings obtained in a study by Holmes (9) in which semiexperimental situations were used to investigate children's fears. The situations included: being left alone (a concealed observer watches the child as he is left alone in the experimenting room when the experimenter leaves with the excuse that she has to get her handkerchief in another part of the building); falling boards (two inclined boards so arranged that, as the child steps from one to the other, one board suddenly tilts and gives way a distance of two inches); a dark room (the child is asked to retrieve a ball seemingly inadvertently thrown by the experimenter into a long, narrow, dark passageway); a strange person (with the child in the room, and in his path if he endeavors to reach a box of toys, is a woman rakishly dressed in a long gray

coat, large black hat, and a black veil that obscures the features of her face; high boards (the child is asked to walk across a plank raised at elevations of from about two to over six feet from the floor); a loud sound (produced by sharply striking an iron pipe with a hammer); a snake (the child is asked to pick a toy out of a box in which is a live snake, two feet in length); a large dog (the child is asked to go and pat a dog that is brought in on a leash). The experimental situations were not designed to frighten the child (except for the possibility that he might be startled by the noise and the inclined board), but rather to confront the child with a situation into which he could choose to enter and participate or from which he could withdraw and retreat. Detailed records of what the children did were made by observers, and the presence or absence of "fear" was determined according to carefully formulated definitions and criteria. The number of children at each yearly age level ranged from twelve to forty-five, with the smallest numbers at sixty to seventy-one months.

TABLE XXI

PERCENTAGE OF CHILDREN AT YEARLY AGE LEVELS FROM 24 TO 71 MONTHS WHO SHOWED FEAR IN VARIOUS EXPERIMENTAL SITUATIONS¹

<i>Situation</i>	<i>Percentage of Children Showing Fear</i>			
	<i>24-35 months</i>	<i>36-47 months</i>	<i>48-59 months</i>	<i>60-71 months</i>
I. Being left alone.....	12.1	15.6	7.0	0
II. Falling boards.....	24.2	8.9	0	0
III. Dark room.....	46.9	51.1	35.7	0
IV. Strange person.....	31.3	22.2	7.1	0
V. High boards.....	35.5	35.6	7.1	0
VI. Loud sound.....	22.6	20.0	14.3	0
VII. Snake.....	34.8	55.6	42.9	30.8
VIII. Large dog.....	61.9	42.9	42.9	...
Total.....	32.0	30.2	18.1	4.5

Results in a study of this kind do not show the extent to which a stimulus of a certain class (such as the presence of a snake) will

¹From Holmes, F. B.: "An Experimental Study of the Fears of Young Children," Jersild, A. T., and Holmes, F. B.: *Children's Fears*, Child Development Monographs (New York: Teachers College, Columbia University, 1935), No. 20. Pt. III, pp. 167-296. Reproduced by permission.

be more or less fear-inspiring than stimuli of another class (such as loud noises), since it is not possible to equate these stimuli and since a child's response will be influenced by surrounding circumstances which may vary from time to time, but the results shown in Table XXI do give clear indications of some trends. There was a general trend toward a decrease with age in fear of the specific situations employed in the study. At the five-year level, only the snake elicited signs of fear. At five years, even the dark room did not produce overt symptoms of fear (but undoubtedly the presence of an adult accounted for this; for, according to their own reports, many children of this age are afraid of dark places, especially when they are alone).

Limited situations such as those which can be used in this experiment do not, of course, tap the fears of older children. On the other hand, at a given age level, an experimental situation may reveal fears that parents have failed to discern. Holmes found, for example, that the percentage of children who were afraid of the dark was considerably larger than the frequency of such fears according to the observations and reports of parents.

CHANGES WITH AGE IN THE EXPRESSION OF FEAR

As children grow older, there tends to be a decrease in the number of occasions per day or week when they exhibit overt signs of fear, such as crying, trembling, shrinking, retreating, or clinging to an adult. However, this does not mean that there is a corresponding diminution in the role of fear in the child's everyday life. The decline in overt expression occurs, in part, as a feature of the child's general tendency toward less overt expression of emotion as he grows older. The decline is associated also, in part, with changes in the character of the dangers which the child fears; lingering fears of imaginary dangers or of misfortunes that might occur seldom express themselves in sudden starts or cries or fleeing. Just as fear reactions may occur in countless varieties and degrees as a child grows older, ranging from transitory fear of a specific person or event to less clearly formulated anxieties,

forebodings, feelings of guilt, and uncertainty, so also the expression of fear may take on innumerable forms and occur in countless disguises.

CHILDREN'S FEARS AS COMPARED WITH "WORST HAPPENINGS"

The extent to which children's fears, as reported by the children themselves, are formulated in terms different from prosaic day-to-day hurts and vicissitudes is illustrated by a comparison between accounts given by school-age children of their fears and of the "worst thing that ever happened" to them. Such a comparison is shown in Table XXII. In describing "worst happenings," the children predominantly mentioned definite misfortunes, illnesses, and other unpleasant experiences that had actually befallen them. Their fears, by contrast, were predominantly described in terms of somewhat vague calamities that might occur. Actual harrowing experiences with animals, for example, constituted less than two per cent of the "worst happenings," but fear of animals (mainly remote animals such as wolves, lions, gorillas, and so forth) represented about fourteen per cent of reported fears.

PERSISTING FEARS

Although many fears wane and even seem to disappear, a large proportion of childhood fears persist in one form or another into adult years. Fears most likely to wane or to be modified with time are those that have reference to relatively concrete situations—such as specific objects, steam shovels, a hole in the sidewalk, lights and shadows, strange or unfamiliar persons, objects or places to which the child becomes accustomed in the normal course of his experience—and fears arising from a harrowing experience which does not happen to recur or to be reinforced by other experiences. Even though a great many such fears seem to vanish, many others may persist, either in their original or in a modified form. For example, a child showed fear of crossing the street after having been hurt by a car; shortly after this experience, he

TABLE XXII

FREQUENCY OF MENTION OF VARIOUS CATEGORIES IN CHILDREN'S OWN DESCRIPTIONS OF THEIR FEARS AND OF THE WORST THINGS THAT EVER HAPPENED TO THEM

[Abridged results, based upon interviews with 398 children aged 5 to 12 years.¹]

<i>Event Described</i>	<i>Percentage of Children Naming Event</i>	
	<i>Described as Actual "Worst Happenings"</i>	<i>Described as Fears</i>
Bodily injury, falling, illness, traffic accident, operations, hurts and pains, <i>etc.</i>	72.7	12.8
Attack or danger of attack by animals.....	1.8	13.7
Contacts with or activities of criminals, kidnappers, burglars, bad characters, <i>etc.</i>	1.3	8.0
Being alone, in dark, in strange place, being lost, and dangers associated with being alone, darkness, <i>etc.</i>	2.3	14.6
Death, loss, removal of relatives, being abandoned by relatives.....	5.0	1.4
Contacts with, or activities of, or dangers from supernatural agents, ghosts, witches, corpses, mysterious agents or events.....	0.0	19.2
Scolding, embarrassment, being teased, ridiculed, <i>etc.</i>	4.5	3.4
Remaining categories.....	12.4	26.9

had nightmares involving traffic accidents, and following that he showed fear of the dark and of being left alone in a room. The latter fear remained, even though the original fear of traffic seemed to subside. The original harrowing experience apparently had an important bearing upon the later fear of the dark and of being alone, although many other factors may also have contributed to the persistence of this fear.²

In the previously mentioned study of childhood fears, as recalled by adults (10), it was found that, in the case of 804 fears concerning which information as to the subsequent happenings was reported, over forty per cent still persisted into adult years. This percentage cannot, of course, be accepted without reservation,

¹ From Jersild, A. T., Markey, F. V., and Jersild, C. L.: *Children's Fears, Dreams, Wishes, Daydreams, Likes, Dislikes, Pleasant and Unpleasant Memories*, Child Development Monographs (New York: Teachers College, Columbia University, 1933), No. 12, 172 pp. Reproduced by permission.

² A list of fears shown at one age and later fears related to the original fright, as described by parents, is presented in a study by Jersild and Holmes (12).

since adults would be likely to recall the fears that still persisted and to forget many passing fears that had waned, and fears reported to have vanished might have influenced later fears in a manner not recognized by the adults. At any rate, results such as these, as well as snatches of information that one can gain through informal observation and conversation with adults, indicates that there is a large carryover of childhood fear into later years. Of the fears described in this particular study as "still persisting," about twenty-seven per cent were also described as being the "most intense" fears recalled from childhood and twenty-eight per cent were described as being the "earliest recalled" fears.

Among the fears that show the largest carry-over into later years are fears of animals, of bodily harm through such dangers as fire, illness, drowning, and the like, and of dangers associated with the supernatural, with the dark and with being alone.

FACTORS INFLUENCING SUSCEPTIBILITY TO FEAR

Although in many cases of fright the cause seems to be relatively simple, as when a person starts at a loud noise or shrinks from an oncoming object, the factors underlying most of the fears and apprehensions of everyday life are usually quite complex. What a person regards as dangerous comes in time to depend to a large extent on past associations, on the values which he deems to be at stake, and on his real or imagined inability to cope with a situation. The effect of past associations of a relatively simple sort can be noted when a child, after being knocked down and bitten by a dog, later fears this dog even when the animal is not advancing toward him or fears all dogs. Theoretically, there might be endless ramifications of this experience. The child might, for example, be afraid of the locality in which he encountered the dog; he might be apprehensive when he sees the dog's master in a new locality, even though the dog is not around; he might conceivably become afraid of all furry creatures, and even have misgivings about a neighbor whom he hears described as a "dirty dog." Although the influence of associations of this sort

can frequently be observed in daily life, the particular turns that a child's fears will take are highly unpredictable. Two children may cry and struggle in apparent terror when thrown off their feet by the same high wave at the beach; one of them quickly recovers and goes on wading, while the other shrinks from the water for a long time to come. The nature and intensity of the external stimulus alone cannot account for the difference in response.

Actual weakness and incompetence in the face of a situation that demands an adjustment is an obvious factor in the occurrence of fear, but again many factors enter in to produce variations in response. A child who is weak but perspicacious may discern danger and be afraid where a similarly weak but ignorant brother recognizes no menace (and, with good luck, lives long and happily). Two children may be equally competent, but one may be less trustful of his own powers.

Apart from fears that arise in a relatively "straightforward" manner, through a harrowing experience—as in the case of the child mentioned above who feared a dog after having been knocked over and bitten—there are fears that are influenced to a large degree by underlying tensions, due to a variety of factors in the child's daily life, and fears that are aggravated by vicarious stimulation. Frequently in children, as in adults, the particular event or condition that is feared is relatively incidental. Just as an adult who is tense, fatigued, harassed, or lacking in confidence may now worry about his health, now be apprehensive concerning his ability to do his job, now reflect anxiously upon his past misdeeds, so a child may fasten now upon this, now upon that, as the focus of his fears. The factors underlying fear involve all the complex and diverse influences that have been involved in an individual's life history.

It appears that many of the fears that children describe serve as an image or projection of forebodings and anxieties which the child is unable fully to define. When a child, for example, reports that he is afraid of lions, or of "a corpse, like a dead person I saw once, I can still see him before my eyes," or of "an old man

with a black beard and small, hard eyes," the imagery of his fear may be quite vivid; but this image may represent underlying apprehensions that are far from clear, just as the images and events that occur in a nightmare do not explicitly represent the fatigue, illness, emotional turmoil, or other disturbances that played a part in precipitating the nightmare.

Among influences that may aggravate a child's fears are threats by parents, teachers, and playmates, and lurid stories about accidents, death, ghosts, criminals, and catastrophes. In the study cited above (10), numerous instances were reported by adults of appeals to fear by their parents, as a means of discipline and intimidation.

Following are a few illustrations, as reported by the subjects themselves: By way of reprimanding a six-year-old boy for striking his sister, the boy's mother told him that, because of what he had done, a time would come when he would not be able to move the hand that had struck his sister. The mother then described what happened to a neighbor's child. When this child died, the mother said, his hand was outside the coffin, and no one could put it inside, so that the lid of the coffin could not be closed until a priest had struck the hand, when it slipped back into the coffin; in the meantime, "everybody talked about this child, and laughed and laughed, and this may also happen to you." A child's fear that his mother might die (his mother actually was sickly) was aggravated by taunts from other members of his family, who told him that the mother would leave this earth because the boy was so mischievous. Numerous accounts were given of similar techniques, such as threatening that the child would be put into a "big, black, hole," threatening him with abandonment, with being locked in the cellar, attic, or closet, and with specific objects that had been described to the child as being sinister (such as a broken doll's head which a maid kept in a closet, a menacing picture hanging on the wall, and a teddy bear that was kept in a dark room).

In many instances in which such techniques are used, the specific

form that the threat or intimidation takes may be less important than the hostility and rejection that underlie the threats. But it is not merely older children or a child's elders who thus play on a child's fears; the whole structure of society coöperates in utilizing fear for ulterior ends. So it is that the main support of morality, the incentive to thrift, honesty, and sobriety, and all the virtues so often lies not in love of doing what is good but in fear of consequences of doing wrong.

In passing, it may be noted that, at the present time, children are apparently being exposed to more vicarious fear stimulation than was the case in earlier generations, in the form of sensational newspapers, the speedy communication of catastrophe, exciting movies and radio programs, and so on. Although, as noted above, children's fears are influenced to a considerable degree by these factors, it does not appear that the fears of children today, as reported by themselves, differ substantially from the fears of children of a generation ago, as reported by adults in recollections of their childhood fears. More important than this or that specific form of excitement that may prevail at one time and not at another, it seems, is the undertow of factors leading to insecurity, superstition, threats, and other forms of intimidation that carry on from one generation to the next.

Apart from deliberate attempts to frighten, adults may have a distinct influence on a child's fears through their own fears. By obvious or subtle manifestations of their fears, adults may not only suggest to the child the presence of danger but also weaken the child's conviction of security in their protection. In a study by Hagman (8), a correlation of .667 was found between the gross number of children's fears and the gross number of mothers' fears, as reported by the mothers.

In passing, it should be noted that a child's display of fear may come to serve an ulterior purpose, as when he proclaims his fear of the dark in order to prevail upon one of his parents to accompany him to bed or, at a later age, uses a plea of fear of going out alone to the woodshed, with the result that he gets help in carrying

in the wood. There are countless ways in which such factors, both deliberate and unwitting, may play a role in motivating expressions of fear. A person may even appeal to his own fears as a means of condoning his actions, as when he uses this device to excuse his lack of ambition and industry.

VALUES OF FEAR

Any condition that mobilizes an individual's energies and puts him on the alert in the face of danger is obviously of tremendous value as a protection against possible harm. Even anxieties and apprehensions concerning dangers that are never likely to befall him may have a salutary effect. Yet, it may be observed that fear often produces commotion and consumes energy, without helping much to solve the underlying problem. At an earlier point, mention has been made of some of the bodily changes that occur in emotional excitement. Such changes can be verified in an ordinary attack of stage fright. The bodily changes accompanying fright presumably help a person to face an emergency and give him greater strength and endurance for fight or for flight. However, often in modern life an issue which one fears cannot be solved by using one's fists or taking to one's heels. If a worried student could pass a hard examination by outrunning his instructor or by throwing him out of the window, the energies mobilized within him would be well suited to the occasion; but civilized life being what it is, the student must sit down and write with a trembling hand, even though he may be better prepared to push stiff uppercuts than to push ideas through a pen. Most of the emergencies in modern life call for quick wits, rather than for strong fists.

The value of the bodily changes that take place in emotional excitement can be tested indirectly to some degree. The adrenal glands appear to play an important part in these changes, and it is known that a hypodermic injection of adrenalin will produce bodily symptoms similar to many of those seen when one is violently angry or afraid. Although the injection will not produce anger or fear as such, a person who is charged with adrenalin

may become more susceptible to irritations that normally would not disturb him.

What is a person's state of efficiency when he is charged with adrenalin, as compared with his efficiency under normal conditions? Results of a study of this problem [Jersild and Thomas (15)] showed that adult subjects who had received an injection of adrenalin made somewhat better records in tests of motor speed and muscular strength than under normal conditions; on the other hand, their performance in mental operations was not improved but was slightly impaired. Moreover, the experience as a whole had a somewhat exhausting effect, and left the subjects with depleted vigor for carrying on their normal duties during the remainder of the day.

From the foregoing discussion, two comments may be made regarding the utility of the emotions as far as fear is concerned. First, the child entertains many fears which are not concerned with dangers that are likely to befall him. Second, there is evidence that the bodily changes which occur in fear, even if the fear is well warranted, will not help the individual much in meeting emergencies that call for the exercise of brain rather than brawn.

It is true that these two statements do not apply to the domain of fear as a whole. Even though the child may have unwarranted fears, many of his fears may still provide a motive for prudence and caution; they may lead him to avoid some dangers and to prepare himself for those that might occur. Also, the fears that the child experiences in daily life are often mild in character and change the direction of his conduct, without producing the severe internal upset that takes place when a person is actually in terror. However, the point may still be maintained that many fears are in excess of what is needed for prudent living and that a number of the effects produced by intense fear inhibit rather than promote effective action.

OVERCOMING FEAR

As already noted, many fears are overcome in the normal process

of growth; as a child lives and learns he comes to take more and more things in his stride. In adult accounts of childhood fears that since have been overcome, we frequently come across such statements as: "I outgrew it," "I learned how to take care of myself," "After a while I knew how to handle it." Sometimes also, of course, a fear vanishes or recedes when the apparent cause of it has been removed, as when a child who fears bigger boys in a certain locality moves to a new neighborhood.

An interesting account of some of the signs of fear or uneasiness shown by children when facing a new situation and of the decline in such signs as the children become accustomed to the situation is shown in the summary below. This summary (adapted from a study by Slater, 26) is based upon observations of forty children, aged two years to three years and four months.

TABLE XXIII
CHANGES WITH THE PASSAGE OF TIME IN CHILDREN'S
RESPONSES TO A NEW SITUATION¹

<i>Responses</i>	<i>Number of Children Who Showed These Responses During the First and Subsequent Weeks of Nursery School Attendance</i>			
	<i>First week</i>	<i>Second week</i>	<i>Third week</i>	<i>Fourth week</i>
Postural tensions (hunching shoulders, twisting head or body, tense method of locomotion, etc.)..	20	12	9	4
Tics (grimacing, twitching, nail biting, handling various parts of the body, etc.).....	31	15	8	3
Anxious expressions.....	27	10	5	3
Long periods of dreamy watching.....	23	11	6	3
Rejection of group activities.....	17	9	5	2
Calls for mother; asks to go home.....	16	7	3	1

An accompanying table, in Slater's report, shows the frequency of these responses during the first four days. It appears that there was a marked decline in these evidences of uneasiness after the

¹ Adapted from Slater, E.: *II. Types, Levels, and Irregularities of Response to a Nursery School Situation of Forty Children Observed with Special Reference to the Home Environment*, The Center for Research in Child Health and Development, School of Public Health, Harvard University, Society for Research in Child Development Monographs (1939), Vol. 4, 2, 148 pp. Reproduced by permission.

very first day, and outstanding emotional disturbances did not appear after the first visit, except in the case of the very young children. In passing, Slater points out that the observers in this study gained the impression that a child's apparent degree of concern or unconcern on his first visit did not indicate how well or how soon the child would adjust to the new situation: ". . . children who cried loudest on their first morning might often be the happiest later on, whereas some who were tearless on their first morning sometimes continued for days to be rather solemn and none too happy."

Attention to Underlying Causes. A consideration of some of the factors that cause or aggravate children's fears suggests measures for overcoming fear. A first principle is that one should look not simply at the specific symptoms but at the circumstances and conditions surrounding the fear. If a child's fear has emerged from a setting of insecurity, uncertainty, demands that go beyond his powers, inconsistency or confusion in the discipline to which he is exposed, threats, severe punishments, and various means of intimidation, it obviously would be more important to look for ways in which such conditions can be improved than to deal directly with the child's symptoms of distress. As long as there are underlying difficulties that press upon the child from many sides, the elimination of one particular expression of fear may shortly be followed by other fears of a slightly different cast. (For example, a child's apparent fear of being abandoned, exhibited whenever his mother leaves the house on a brief errand, may be associated with other symptoms of distress that first appeared when a new baby came into the household. This particular expression of fear may abate in response to parental efforts to help the child to overcome it, only to be followed by other expressions of fear—such as fear of sleeping alone in a dark room—if the underlying uncertainties still persist). Frequently, before definite help can be rendered along this line, it is necessary to have opportunity for becoming acquainted with the child and his circumstances over a period of time, although sometimes the mere fact that the child

has a friend in court and a chance to receive some kindly attention and recognition may help to relieve some of his difficulties quite quickly.

Practical Techniques. Numerous studies have been made of the overcoming of fear in experimental situations and of methods used by parents in dealing with their children's fears [Jones (18), Hagman (8), Jersild and Holmes (10, 11)].

In studies by Hagman and by Jersild and Holmes, it was found that the method used most frequently by parents is to try to talk the child out of his fears, to explain matters to him, and to endeavor to convince him that there is no danger. It was noted that this procedure alone seldom helps much, although it may help in some cases, especially if the child has confidence in the adult (the child's confidence in the adult is more important than the truth of what the adult says) or if, by his statements, an adult substantially disposes of the matter that is feared (as when a child who fears punishment or the assignment of a task from which he shrinks is convincingly informed that the feared event will not happen). Frequently, a verbal explanation or reassurance may be couched in terms that the child does not comprehend (as when a father gives an exposition of thermodynamics to a child who is afraid of the noise made by a steaming tea kettle), or it may not touch upon the aspects of a situation which frighten the child.

Another method that has been found helpful is to set an example of fearlessness; such an example, among other things, may bolster the child's assurance in the protection of another person, at least for the time being, carry the suggestion that there is nothing to be afraid of, illustrate techniques for handling the feared situation, and set a standard of courage for the child to emulate. The example of fearlessness is not so likely to succeed, however, if it involves the use of abilities and techniques that are beyond the child's capacities.

In many situations the example of fearlessness set by other children may have a marked effect. A child will frequently fol-

low other children into activities that he would be afraid to undertake if he were alone (as when he goes through a pasture in which there are cattle that he fears, or climbs, or enters an isolated barn, or approaches a strange dog in the company of others). Sometimes children as a group will venture into situations that each would fear if he were alone (such as entering an abandoned barn that may be "haunted"). Sometimes the mere fact of watching the example set by another child will have a salutary effect, as when a child permits himself to be tossed into the air by an adult after having observed that another child laughingly accepts such treatment. It often happens that a child subsequently shows no fear after thus having been initiated into a situation.

Another procedure that has been found to work in some situations is to try to effect "positive reconditioning" by presenting the feared stimulus with an attractive or benign stimulus. This method is likely to work best if the unfeared stimulus is not simply presented side by side with the feared event but if the latter can be incorporated into a larger setting that is reassuring.

Apart from efforts to alleviate tensions and pressures in the situation that surrounds a child's fear, the most effective method of dealing with fear is to help him, by degrees, to come actively and directly to grips with the situation that scares him, to aid him in acquiring experience and acquaintanceship with the situation, to aid him in acquiring skills that are of value in coping with the feared event. Although skill alone may fail to root out fear, in general it may be said that, other things being equal, the child who has acquired the widest range of competence and the best array of skills is likely to have the fewest fears. Such competence and skills includes not simply proficiency in the motor activities that are involved in everyday play—such as opening doors and switching on lights—but also competence in ways of dealing with other persons—meeting and greeting and fraternizing with them—and intellectual skills in the form of information.

Frequently a child will exert himself to improve upon his

competence; indeed, some children are almost pathetically eager to "practice" activities that will help them to overcome fear. An example of this appears in the case of a child who was afraid of heights, and who repeatedly was seen to arrange boards and boxes so that he could climb to higher and higher altitudes on more and more precarious footing. On one occasion, when he had succeeded in going up and down the whole length of an unstable inclined board, he gave a shout of triumph. Another example is the case of a child who was afraid of being alone in a room; while "practicing" to overcome this fear, he first asked his nurse to stand at the end of the hallway as he went into the room alone, then to stand out of sight in another room, then to go to a remote part of the house. However, frequently when a child is afraid he will not have the ingenuity to devise such techniques without adult help.

Table XXIV shows results obtained in a study in which parents were interviewed on the methods they used in helping children to overcome fear. It will be noted that the most active procedures, those that help the child to face and deal with the feared situation, were found by parents to be most helpful. The parents reported many futile efforts to talk a child out of his fears. Procedures such as ridicule, ignoring the fear, or forcibly compelling the child to face the feared situation were of little help.

The principle of dealing with fear by helping the child to cope directly with the feared event was used in an experimental study by Holmes (9). In one series of observations, Holmes found that, of twenty children in a nursery-school group, fourteen were initially afraid to enter a strange, dark room to recover a ball which the experimenter had thrown into the room, seemingly by inadvertence, while playing with them in an adjoining large room. The children were then familiarized with the place, and after relatively few sessions, thirteen of these fourteen children went into the room without hesitation, turned on the light, and recovered the ball. In another series of experiments, active procedures and encouragement of the child to venture into the feared situation

TABLE XXIV

METHODS USED BY PARENTS IN EFFORTS TO OVERCOME
CHILDREN'S FEARS¹

[Based upon data obtained through interviews with the parents of 47 children. The values (with the exception of those in the last panel) represent the number of different fears in connection with which each method was reported to have been used successfully or unsuccessfully, either alone (sole) or in conjunction with other methods (contributing).]

Methods Used in Dealing with Fear	A <i>Fears related to specific objects, situations, activities (noises, strange persons, animals, medical treatment, strange objects, rough play-mates, traffic, water, etc.)</i>		B <i>Fears related to imaginary, remote or intangible events (bogey, death, kidnappers) and fear of the dark and matters associated with darkness</i>		Total A and B	Per- centage suc- cessful
	Suc- cessful	Failed	Suc- cessful	Failed		
Verbal explanation and reassurance: telling child there is no danger, attempt to explain nature of noise, assure him there is no bogey, etc.						
Sole.....	12	11	4	12	39	41
Contributing.....	10	3	2	1	16	81
Verbal explanation, reassurance, plus demonstration (without involving active participation by child): attempt to demonstrate source of sound, take feared engine apart, "show" there is no bogey, etc.						
Sole.....	7	6	2	4	19	47
Contributing.....	3	0	2	1	6	83
Example of fearlessness in others.						
Sole.....	2	4	0	0	6	33
Contributing.....	11	3	0	0	14	79
Positive but passive "conditioning": attempts to associate feared event with pleasant or unfeared familiar stimulus or reward but without calling for active participation by child.						
Sole.....	3	3	0	0	6	50
Contributing.....	1	3	0	2	6	17
Enforced contact with or participation in feared situation, also verbal pressure to participate, including ridicule and invidious comparisons. ^a						
Sole.....	1	12	1	1	15	13
Contributing.....	1	1	0	0	2	50

¹ From Jersild, A. T., and Holmes, F. B.: "Methods of Overcoming Children's Fears," *Journal of Psychology* (1935), 1: 75-104. Reproduced by permission.

TABLE XXIV (Continued)

Methods Used in Dealing with Fear	A <i>Fears related to specific objects, situations, activities (noises, strange persons, animals, medical treatment, strange objects, rough play-mates, traffic, water, etc.)</i>		B <i>Fears related to imaginary, remote or intangible events (bogeys, death, kidnappers) and fear of the dark and matters associated with darkness</i>		Total A and B	Per- centage suc- cessful
	Suc- cessful	Failed	Suc- cessful	Failed		
Providing opportunities for child to grow acquainted with feared situation on his own accord by making it accessible to him in his daily environment, but without using compulsion or ulterior allurements, or promoting specific skills.						
Sole.....	8	2	1	0	11	82
Contributing.....	3	0	0	0	3	100
Graded presentation of fear stimulus; increasing intensity of stimulus by degrees: introduction of part of fear stimulus, then entire stimulus.						
Sole.....	2	1	1	0	4	75
Contributing.....	7	0	2	0	9	100
Specific attempts to promote skills, to encourage child to develop specific methods of his own in coping with feared stimulus, to bring the child into active experience with or participation in the feared situation.						
Sole.....	21	3	6	0	30	90
Contributing.....	9	2	0	1	12	75
Ignoring the fear: taking no notice when child seems afraid, changing subject when he mentions feared situation, etc.						
Sole.....	1	1	0	4	6	17
Contributing.....	0	0	0	1	1	0
Removing the cause of fear or introducing palliatives: steering him away from contacts with feared situation, comforting and helping him when he is afraid.						
Sole.....	0	2	1	7	10	10
Contributing.....	0	0	0	2	2	0

^a The tallies here represent nine instances of physical compulsion, six instances of verbal pressure, and one instance of physical and verbal pressure combined. All of the purely verbal pressures were "failures."

by degrees was used in an effort to overcome the fears of children who were afraid of walking the length of a plank that was raised above the ground. After eight brief sessions, over a period of about a month, one child, who at first clung to the experimenter when placed at even a low altitude, whined, and protested that she would fall and get hurt, happily walked back and forth the length of a board raised six feet above the ground. Previous to the experiment, the child had been described by nursery-school teachers as one who exhibited poor motor coördination and fear of climbing on the playground. After the experiment proper, a high board, with a ladder leading to it, was installed on the playground. On the first occasion, the child walked across the board, at a height of six feet, though somewhat slowly and hesitatingly; at the third exposure, she walked promptly from one end to the other, with no signs of apprehension. Even the sight of another child who had tried to climb the ladder and had fallen and cried did not seem to deter her.

Another child also made progress, but less rapidly; at the third exposure, after watching the example set by another child, he walked across the board at a height of four feet. But he relapsed on later trials. This relapse occurred at a time when his nurse left the household and his mother was in the hospital having a baby. The whining and infantile responses which he showed toward the experimenter in the fear experiment corresponded to behavior that also was prominent at home, and it appeared that, far from having any strong desire to overcome his fear, he used the fear situation as a means of getting attention and of having contacts with an adult. The procedure of simply helping the child to acquire competence in dealing directly with a specific feared situation did not suffice to overcome a fear that seemingly had a certain amount of utility in the child's scheme of living and that was deeply interwoven with other emotional difficulties.

It has been noted that an active approach may be helpful even in overcoming fears of imaginary dangers. One child in the study represented in Table XXIV was afraid of an imaginary

dog, which hounded him, troubled him when he was alone, and haunted him in dark places. When his resourceful mother observed this, she set out to help him. She first watched the child in his make-believe play. Gradually she entered into this play herself and joined the child in games of "let's pretend"; gradually, also, she began to introduce the imaginary dog into the make-believe play. In time, the child took the dog with him into closets and elsewhere, all as part of the play pattern, and eventually he no longer appeared to be bothered by the dog.

Many of the techniques that can be used in overcoming fear may likewise be adapted to the prevention of fear. In addition, steps frequently can be taken to forewarn or forearm the child, so that he may be prepared against a sudden or abrupt happening that might cause fear and, by degrees, be prepared for a new situation (such as having a trusted adult at hand on his first exposure, letting him make his way into a new play group at his own pace, letting him become accustomed to the doctor as a kindly person before a painful treatment is begun, and so forth). By reason of the fact that many events are unpredictable and that a child's reactions to new situations are quite unpredictable, it would, of course, be impossible to undertake a thoroughgoing program of forewarning and forearming the child. Furthermore, the very steps taken to prepare a child for a situation that might frighten him may have effects just the opposite of those intended. In the observational studies of fears mentioned above, one of the most acute instances of terror—involving an outcry, hasty flight, and prolonged crying, followed by moaning and trembling—occurred when a child first met a badly crippled neighbor, after the parents had previously taken some pains to prepare the child for the event. What a child is told in preparation for an event and the very fact that his elders go out of their way to forewarn him may, under some conditions, suggest to him that there actually is something to be afraid of and may aggravate rather than forestall his fright.

It may be pointed out that every passing sign of fear in a child need not be looked upon as a signal of distress. Apart from fears

that induce wholesome caution and serve a useful purpose and fears that are likely to wane if the child is simply given enough time to accustom himself to the situation, there are many symptoms of fright which occur as a result of the child's deliberate attempts, in a situation of comparative safety, to court danger and to play with fear, as when he takes chances in play or seeks vicarious thrills through stories that are momentarily exciting but have no observable damaging after-effects.

SHIFTS FROM FEAR TO ANGER

Both anger and fear represent a reaction to a problem, and sometimes, as suggested in an earlier chapter, a child may shift from one form of response to the other. Sometimes, for example, when a child has started in fright at a sudden sound or movement his response changes to one of annoyance when he discovers that he is safe. Again, he may show anger in response to a situation that previously he had feared, as when he attacks a bully from whom he previously retreated. Similar shifts often occur in his dealings with animals or inanimate objects: he may be quite apprehensive when first he rides his coaster or bicycle down a steep hill, and his response to jolts and momentary loss of balance may be one of fright; as he gains mastery, similar jolts may simply cause annoyance. Sometimes, to be sure, a shift in the opposite direction also occurs: in a conflict with another child, a child's predominant feeling may be one of anger at the start, and then, as he discovers that he cannot hold his own, there may be a change to a feeling of fear.

A child's response to a situation may likewise involve varying degrees of both anger and fear, as when he fears a bully and also is enraged at him or, in his private phantasies, plots and schemes of both escape and revenge.

ANGER

In the usual child, anger is openly displayed more frequently than fear, for several reasons. A large number of ordinary events in his normal home routine may provoke anger, while in the

case of a child who is protected and well cared for fear stimuli usually involve something novel, intense, or out of the ordinary. Also, a child can take measures to avoid many of the situations that he fears, such as high places or the neighbor's dog, but it is difficult to avoid irritating conditions in his everyday environment. Moreover, many children soon learn to make use of a display of anger as a means of getting attention or of having their way. In a child's early relations with other children, under the auspices of parents or teachers, occasions leading to irritation and aggression are likely to occur more often than are occasions leading to fear, especially after children have become accustomed to one another. In a study of a group of preschool children aged three to five years, Felder (2) found that the number of anger outbreaks were many times as frequent as the number of manifestations of fear. However, this difference in public manifestation does not mean that there is a similar difference in the actual frequency or role of anger and fear, since many children who express their anger quite overtly may be quite subdued in manifestations of fear or may even seek to disguise their fear.

EARLY MANIFESTATIONS

Causes of Anger. Anger can be aroused in young children by forcible restraint, interference with movement, blocking of activities that are in progress, and thwarting of wishes. Frequently anger occurs as a response to cumulative irritations. The younger the child, the more his anger will turn upon an interference with his physical activities; as he grows older, the conditions that cause anger include not only actual bodily restraint but also interference with his possessions, frustration, thwarting of plans, purposes, and expectations.

Anger, like fear, is influenced by factors of both learning and maturation. As we have seen, during the first few days of life, such interferences as having his arms pinned momentarily to his sides or having his nostrils closed, so that breathing is prevented for a few moments, do not usually seem to arouse the ire of an infant. When the infant does protest, his movements are likely to

be uncoördinated and to display no uniform or characteristic pattern of rage. As he grows older and matures organically, he becomes more responsive to interference and exhibits more specific reactions of a defensive or offensive sort. After his capacities have improved through growth, learning comes to play an increasingly important role in determining the manner in which he will express his rage and the conditions that excite him. Throughout childhood, however, there are individual differences in the irascibility and violence of children that seem due in part to inborn factors. Moreover, at all stages of growth, an individual may, when acutely enraged, "go to pieces," strike out blindly, and revert to diffuse, uncoördinated reactions.

The infant's anger, like that of an older person, often occurs as the result of his own ineptitude. The following incident of rage in an infant five months old is illustrative: A rubber teething ring, which the infant used freely, fell out of her hand, and when she reached to retrieve it, she grasped it at such an awkward angle that she was unable to get the ring into her mouth. She tried to turn both her hand and her head, but to no avail. Thereupon she gave signs of anger—she sputtered, made shrill outcries, banged the ring against the side of her crib, wore an "excited" facial expression, writhed with her entire body, and kicked with her feet. Another infant showed a strong temper when she was unable to sit down after she had achieved, for the first time, a standing position while holding to a chair. Thus, even though the child is not provoked or obstructed by others, he is likely to meet provocations to anger in connection with his own activities.

Changes with Age in the Expression of Anger. A description of conditions which promote anger and of changes in the child's anger behavior as he grows older is given by Goodenough (7), who studied children between the ages of seven months and eight years. Among other things, Goodenough noted that, as the infant grows older, his expressions of anger become less random and more directly aimed at something or someone. Before the age of one year, his outbursts are chiefly explosive expressions, not well

designed to remove obstacles or to attack an enemy; but by the age of four, almost half of his expressions are aimed at the object of his wrath. With this change, there comes an increase in retaliative behavior of a kind apparently aimed to secure revenge for an injury. The most frequent single expression of anger is crying, but this diminishes with age. Threats make their appearance between the ages of two and three and increase in frequency thereafter.

Indirect forms of retaliation and attack observed in Goodenough's study took the form of such activities as the overturning of furniture and the doing of acts previously forbidden, although distinct from the immediate cause of anger. One child of three, when angry, sucked his thumb in a conspicuous manner, although thumb sucking was not his usual habit. Other indirect forms of aggression were raucous laughter and the refusal to speak. One child voiced her resentment toward her mother by such remarks as: "I wish I had a mother like Mary's." In some cases, children expressed their anger by attacks upon themselves; there were instances where a child was observed to bite himself when angry. After-effects of anger were almost twice as frequent and prolonged in children over the age of four as in children under four.

In expressing anger, a child will frequently vary the nature of his outburst under different circumstances. He is more likely, for example, to cry at home than at school (Ricketts, 24) and to hit and kick when angered by another child than when angered by an adult.

Factors Contributing to Susceptibility to Anger. By means of supplementary records, Goodenough studied reasons for children's irascibility. She found evidence that children were slightly more disposed to anger after a restless night, especially following nights when the subjects had wet their beds; that they were more irascible on days when regular bowel movements had not occurred. Anger outbursts were especially frequent just before meals. Children who had records of illness tended to exhibit slightly more anger outbursts than children who had not been ill. The number of

anger outbursts increased somewhat, on the average, when there were adult visitors, and they increased to a greater degree when there were child visitors in the home. Also, there was a tendency toward a greater frequency of anger in children who had more than two adults in the household.

Parents whose children gave vent to many outbursts of anger more frequently attempted to calm them by granting their desires, by removing the sources of trouble, and by coaxing and soothing them than did parents whose children experienced fewer outbursts of anger. The difference gives a clue to the cause of many anger outbursts. Inasmuch as the child gets what he wants, his anger is successful; but if he fails to get what he wants, his anger is abortive, and he will be less likely to resort to overt expressions of anger as a means of solving a problem another time. Threatening was more often reported as a device for meeting the anger of the more irascible children, while spanking was more often resorted to by parents whose children had few outbursts. The difference here is suggestive, but it is too small to permit the conclusion which one might draw.

At all ages after two years, boys displayed anger outbursts more frequently than girls, but the number of children included in the study is somewhat too small to support final conclusions concerning this difference. The difference is accounted for in part, no doubt, by the fact that parents ignored the girls more often than the boys when they were angry and more often used bribery, spanking, threatening, and isolation as a means of coping with the boys' anger.

Goodenough's study offers many practical suggestions with regard to the causation and control of anger. Anger is likely to occur in homes where parents are overanxious and concerned with whether the child's behavior is "good" or "bad," rather than where they are tolerant and capable of looking upon the child objectively. Anger is more likely to occur also where there is worry and anxiety or lack of a sense of humor. Furthermore, anger is often provoked by the critical attitude of parents who tend to nag and recriminate, rather than to view each anger episode as a thing of

the past when the event is over. Consistency in methods of discipline appeared to be a more important factor than the strictness or lenience of the disciplinary procedures that were used. Some methods, such as bribery and letting the child have his own way may bring an outburst to an end, but pave the way for future outbursts.

Even though, on the whole, the provocations leading to anger are usually more obvious and predictable than those producing fear in the young child, it is often difficult to trace the cause of a particular resentment or animosity which the child carries with him for a long time. As in the case of fears, chance remarks, fortuitous unpleasant contacts with a person or situation, and suggestions obtained from stories and readings may, although not supported by pronounced physiological changes, contribute to lasting prejudices or resentments. In the case of older people and adults, anger in a mild form is likely to extend to those who are associated with anything that stands in the way of one's designs. Even the staid scientist may develop a prejudice against colleagues who fail to support one of his favorite theories.

LATER MANIFESTATIONS

Suppression of Overt Signs of Rage. As a rule, the young child has no sooner acquired the ability to stage a good performance of rage than he must begin to learn how to suppress it. Through social restraints and partly through his own discovery as to what is the best policy, he must learn not to cry, bite, pinch, kick, hit, destroy, tear, and attack by physical means when his ire is aroused. During a period of one year, at the preschool age, a notable decline can be observed in the relative frequency of crying and in hitting and other forms of physical attack, and an increase in the use of language, scolding, and fussing (13, 24). Studies of anger in adults by Richardson (23), Gates (4), and Meltzer (22) show how far this learning has gone by the time a person reaches maturity; in several hundred occasions of anger described by adult subjects, there were only a few good fights. The adult has learned to smother most of his violent expression, even though he may still

have a strong impulse to do physical injury to the offender or to scream or swear and make a scene (22). Of course, this does not mean that the anger is disposed of. Although the person appears outwardly unruffled, he may continue to bristle inwardly.

Devious Manifestations of Anger. The individual learns to use many devices as a substitute for overt attack. A frequent substitute is the use of language in the form of sneers, innuendoes, or violent and abusive phrases. The angry person may resort to roundabout methods of overcoming the object of his rage. He may try to belittle his opponent in the eyes of others, to overcome him in competition; he may rejoice in tragedies that befall his adversary, lay plans for overcoming him, imagine himself superior, resort to ridicule and irony and barbed witticism, or imagine situations that will bring sorrow upon his foe. The latter expression is seen in many children who, imagining themselves dead and in the process of being buried, secretly relish the fancied tears of remorse that wet the eyes of those who have abused them.

In extreme cases, anger may be expressed in the form of cruelty, active revolt, vandalism, thievery, and other antisocial acts. Likewise, as noted, a child may discover that he can "get another's goat" by using "bad" words, by using ungrammatical speech, or by mannerisms and little acts which in themselves are relatively harmless but which cause irritation. A whisper behind the offending person's back may take the place of a blow on his chin, or the attack upon the object of one's anger may be cloaked in humor or take the form of satire. The angry person may claim that his indirect attack upon someone else is not due to personal feelings but is to uphold a cause or a principle. A list of all the substitutes that are used for overt attack would fill pages.

THE PREVENTION OF ANGER

It is generally conceded that much of the anger of children and adults in daily life solves no problem and merely adds to the discomforts of life. In addition, anger, in common with pain and fear, is usually debilitating in its effects. But complete prevention of anger would, at best, be impossible. As noted

earlier, occasions for anger frequently arise by reason of the child's lack of strength or his ineptitude in his own play and work. Furthermore, owing to the child's lack of understanding, it is inevitable that the discipline he must undergo will often strike him as a form of opposition rather than of kindness. The business of getting along with others requires that some restraints be put upon the child, and even when his elders impose such restraints in ways best calculated to enlist coöperation and to avoid irritation, to do so in a thoroughgoing way would require more wizardry than most parents are capable of.

When a child is reprimanded for a line of conduct which he has deliberately chosen with an understanding of the issues involved, he may feel ashamed, or angry, or vengeful, even if he realizes the reasons for the disapproval of others; but if the relationship between the child and the disciplinarian is generally one of friendship and mutual respect, such effects are likely to be short-lived. The child who is overindulged and never rebuked may come to feel just as insecure as a child whose elders are unduly strict, especially since such overindulgence may be a symptom of uncertainty in his elders. The normal child appreciates a certain amount of moral arbitration and even a certain amount of arbitrariness. Evidence of this can be noted when children describe the teachers they like best and the teachers they dislike. Among the characteristics mentioned in descriptions of teachers who are disliked, there will be such items as: "She was too easy (or soft)" or "We could get away with murder"; similarly, in accounts of teachers who are liked, there will be items such as: "She is strict but fair," "You knew just how far you could go," or "When she gets mad, there is always a good reason for it." To be sure, items such as these represent only a small portion of the many characterizations that children will describe.

It should also be noted that anger in adult-child relationships may sometimes be of value as an antidote to parental tendencies to overindulge and "spoil" a child. Their impulse to protect a child and to spare him from momentary distress may be so strong that parents are inclined to grant his wishes and to tolerate his

vagaries to such an extent that the child establishes habits that sooner or later will be a handicap to him. As against this impulse, parents also have a human propensity for being annoyed when a child gets too far out of hand, and this annoyance may serve as the starting point for wiser ways of dealing with the youngster. To be sure, if a child's behavior becomes aggravating by virtue of the fact that parents, as a matter of self-indulgence, have encouraged habits which, for the moment, seem cute or amusing, their subsequent annoyance when things get out of hand should be directed mainly against themselves.

The foregoing does not, of course, condone periodic outbursts of rage in an adult's dealings with a child. Such outbursts, whether directed against a child or another adult, are usually a symptom of weakness; for, under most circumstances, they simply indicate that the individual not only is at a loss as to how to solve the problem that confronts him but also has lost control of himself. Disciplinary measures taken under such conditions may serve merely as a means of projecting one's rage upon someone else and as an outlet for rage, rather than as a means of remedying the underlying problem. In deploring such tactics, one should not, however, go so far as to rule that anger should never be shown. Even a parent or teacher, and certainly a long-suffering neighbor, has the right to be angry on occasion. Part of a child's education is to become familiar with the fact that other human beings, being what they are, are subject to anger, whether they be children or adults, just as he himself is. For that matter, an occasional display of asperity by a child's elders is likely to have a much less harmful effect on his "sense of security," if it has any effect at all, than may be induced by the tactics of adults who really are annoyed and go to exhausting lengths in trying to outmaneuver a child, or, as often happens, try to find an outlet by picking at the child, nagging him, ignoring him, pointedly praising others in his presence, and badgering him in countless little ways.

One factor that makes it difficult to deal wisely with an angry child is that a display of anger is likely to provoke resentment in

the person against whom it is directed. If an adult is thus angered too readily, he not only will be less reasonable in finding a solution for the initial cause of rage but, by his own show of anger, will give added provocation to the child. This circumstance often leads to unnecessarily bitter, mutual animosities over a long period of time. Another difficulty is that anger includes a tendency to place the blame on other persons or things when the angry person himself actually may be responsible for the occasion of his wrath. Thus a vicious circle of recrimination may be established.

Anger, as noted above, is a response to a problem. If a child learns that outbursts of rage will dispose of a problem—through the effect which his rage has on others who yield to him or come to his aid—his anger or the behavior initially associated with anger is likely to become habitual. A person so habituated is doubly unfortunate; not only is the tendency toward anger encouraged by frequent exercise, but the necessity for anger also grows greater, for he is not driven to acquire competence in other methods of solving his difficulties.

An important factor in the prevention of anger consists in the avoidance of needless provocation. For one thing, a child should not be compelled constantly to meet difficulties for which he has no adequate solution. Such problems may involve a variety of conditions, such as continual teasing and nagging, constant irritation in the form of unnecessary interference, undue difficulties in competition for affection and recognition, and the imposition of tasks or standards which are quite beyond the child's ability but from which there is no escape.

Sometimes a child can be helped to acquire skills that will enable him to cope with his environment by methods other than anger. The acquisition of skill and ability as a means of obviating anger will be especially helpful in situations in which the child is thwarted by reason of lack of abilities which he actually can acquire. An account of the effectiveness of graded training in overcoming immature behavior patterns, including destructiveness

and other symptoms of anger, is presented in studies by Updegraff and Keister (19, 28).

Many children resent school in its entirety, or a particular subject or teacher, because of constant frustration or inability to meet the school's demands. A child who is weak in a certain project may come to resent the project and his teacher as well, especially if he is constantly reminded of the superior work of his school-mates. If the child's incompetence is due to disabilities that cannot be overcome, the evident remedy is to revise what is required of him. If the task which the child now resents actually is one that he could master in time, his reaction may be remedied if better ways of instruction are used, if he is helped by degrees to master first the easier and then the more difficult features of the work, and if matters are so arranged that he can experience a measure of success and the satisfaction which success brings.

Frequently, a person's anger over one issue may be mitigated or even overcome by a feeling of satisfaction over something else. Thus a child's resentment arising from being thwarted or from failure in one field may be assuaged by success and recognition in some other field. A word of praise, a small favor, a little compliment or act of deference—such as asking the child for information or for an expression of opinion, or letting him have a voice in decisions that are unrelated to the matter at issue—often will divert wrath where reasoning and argumentation, however calm, merely provoke more rage. Somewhat related to this is the rule that the farther one can go in “giving in” or yielding to another without sacrificing the main point at issue, the greater is the likelihood of an amicable solution. By this means, the area of friction is reduced; and often, in dealing with a recalcitrant person, it is worth while to go out of one's way to find extraneous issues on which the angry person may score a victory. Usually what happens is that, once hostilities between two persons are under way, each of them looks for more, rather than fewer, grounds for offense.

In dealing with an angry person, it often is better to work

indirectly than to take direct action against his ire or the immediate conditions that seem to provoke it, since a person's irascibility and his resentments are interwoven with his personality as a whole and are influenced by the turn of his interests and desires, by his skills and accomplishments, by his relations with his parents and siblings, and by his adjustments outside the home. Resentments of various kinds often appear in children's "behavior problems" at home and in school, and the aggressions and counteraggressions involved in these often represent a vicious circle of recrimination growing out of manifold earlier experiences in the child's relations with other people.

JEALOUSY

Jealousy may be expressed in countless ways, ranging from direct attack to subtle and indirect manifestations. Even more variable and complicated are the "inner" or subjective characteristics of jealousy. The term *jealousy* actually covers not one emotional state or type of response but a variety of conditions. The situation in which jealousy is aroused usually is one in which other persons, objects, or conditions possess or share, or threaten to possess or share, affection, honor, or esteem which one desires for oneself. The reaction, in varying ways, may be directed not only against the real or imagined usurper but also against the person or group whose affection one seeks.

The response may take the form of an obsession which, for a time, takes complete possession of the victim's thoughts, or it may be sporadic, appearing only when the individual is directly confronted by the conditions which produce jealousy or meets passing reminders. Issues and conditions that provoke jealousy may be relatively definite, as when an individual is jealous of a certain person in circumstances which he could describe and define, or the underlying conditions may be vague and only dimly recognized by the jealous person. The issues involved in jealousy, as they represent themselves to the sufferer, may concern actual issues that are at stake or they may involve rationalizations and many dis-

guises. In any event, whether the condition of jealousy is chronic or fleeting, localized or vaguely defined, relatively straightforward or highly disguised, it will be influenced by factors in the immediate situation and by factors in the past history of the individual, many of which the individual himself may find it difficult to formulate or recall.

Quite as complex and difficult to define are the feelings and impulses involved in jealousy. In most instances, jealousy will involve emotional experiences akin to anger: an impulse to attack, or a disposition toward vengefulness, or toward sulking and surliness. Implicit in jealousy, likewise, are elements similar to those that are found in fear, for jealousy involves a tacit admission of weakness in the face of an issue which the individual regards as crucial to his own desires or welfare. The fear aspects may involve forebodings or acute anxiety concerning the final turn of events, or experiences of self-deprecation, "feelings of inferiority," and kindred conditions.

To probe the feelings involved in jealousy in childhood would at best be a difficult matter, since the child's experiences are not likely to be differentiated into distinct feelings; and even if they were, a child would not be able to give a well-formulated introspective account of them. An account of feelings described by adults in introspective accounts of jealousy has been offered by Gesell (5). The item most frequently mentioned was anger, and many persons described feelings of hatred and vengeful thoughts; self-pity was also mentioned by many persons, and sulking; and there was frequent mention also of grief, sadness and dejection, mortification, fear, and anxiety. The most frequent combination was anger, self-pity, and grief.

EXPRESSIONS OF JEALOUSY

Many specific examples of the behavior of jealous children have been described in studies of the subject.¹ A four-year-old boy, at first well-disposed toward his baby sister, became aroused when a blanket which had been his was used to cover her; thereafter, he

¹ See Foster (3), Sewall (25), and Smalley (27).

would hit her if the two were left alone together. An extreme case was that of a five-year-old child who had the whooping cough. The doctor told him that if he coughed near his baby sister she might become sick, and "then you won't have a baby sister any more." Thereafter, he was caught several times in the act of coughing into his sister's face.

Sometimes children will express their jealousy through their make-believe and will wreak vengeance by proxy. In a study by Markey, which is discussed in the chapter on imagination, a "housekeeping game" was used to investigate children's make-believe (21). One three-year-old child promptly took the "baby" doll, placed it on the "stove," and earnestly told the baby that it would have to sit there and burn and burn. On further inquiry, it was found that this child was acutely jealous of a younger sibling.

It sometimes happens that a child who is jealous of a sibling but is subdued in his competition with the sibling in the home will be all the more explosive and rebellious in his relationships outside the home. However, this turn of events is not at all invariable, for no two children are likely to react in the same way and the same child may exhibit quite different types of behavior in different situations. Moreover, although competition for affection and attention within the family may take many forms, one should be careful not to attribute all forms of behavior, including "problem" behavior, to jealousy or insecurity in the child's relationships with members of his family.

A jealous child will sometimes revert to earlier infantile habits. For example, a child who for some time has achieved bladder control at night may revert to bed-wetting or may call frequently to his parents at night to come and take him to the toilet; likewise, he may seek more help and attention than at an earlier time in connection with eating, dressing, and other activities. Also, apparently as a bid for attention, he may exhibit fears which did not appear at an earlier time and which, in effect, represent a plea for sympathy and attention (although it should be said that such subtle manifestations can easily be misinterpreted). Again, he

may become more affectionate than was his wont. As the child grows older, his expressions of jealousy become quite varied. The jealous child may take to gossip, tattling, and lying. Again, the symptoms may take the form of swaggering, strutting, assuming a conspicuous attitude of nonchalance, and consciously ignoring others. Vindictive plans and phantasies of self-glorification or of misfortunes for others may occur. The child may assume a martyr's role and brood upon the unfairness of his plight. Again, the child may imagine himself in a future conquering-hero role.

Sometimes parents unwittingly discriminate against one child by showing greater admiration for another child in the family. It is only human for parents to prefer some traits and characteristics to others, and, in the process, one child may vaguely realize that he does not rank high in their estimation as compared with his brother or sister. One can often see children whose behavior seems influenced by such discrimination. Even though the child who plays second fiddle may not express himself aggressively against his sibling, he is likely to find some means of giving vent to his condition. He may become somewhat loud of speech, in an effort to attract attention, or he may become meek and submissive and, by being helpful, silently strive to win good will. He may even go so far as to show an uncommon degree of solicitude for his sibling rival. The frantic activities of a child who is thus striving for a place but is barred from direct attack upon his rival often appear, at first glance, to mark the youngster as a loud show-off or as an unusually "good" child, while, as a matter of fact, such activities may merely betoken the child's uneasiness and helplessness.

RELATED FACTORS

When jealous children are singled out as a class for special study and compared with children who are not notably jealous, the findings do not lead to any sweeping generalization that would account for the difference in all cases. It has been found, however, that jealousy is often entangled with other symptoms of emotional maladjustment. Among the characteristics observed

more frequently among jealous than among nonjealous children in a study by Foster (3) were selfishness, pugnacity, a special attachment to one parent, and neurotic fears; also, a higher proportion of jealous children exhibited sleep disturbances, enuresis, habits of nail biting and thumb sucking, hyperactivity, destructiveness, and excessive demands for attention. Where one finds many disorders of this kind, the aggressive expressions of jealousy that occur may be simply a feature of a bundle of disorders that spring from a common cause.

Studies of jealous children indicate that jealousy may occur both among the bright and the dull. In one investigation, there was evidence that the duller of two siblings was more likely to be jealous, especially if he was the older of the two (27). However, it is not the mere fact of a difference in ability but the parental attitudes associated with the difference that will be most influential.

It has been observed that jealousy is likely to be less frequent when the age difference between two siblings is less than eighteen months or more than forty-two months (25). Jealousy has been found to be associated to a marked degree with evidences of oversolicitude on the part of the mother, inconsistency in discipline, and discord in the marital relations of the parents.

The coming of a new baby in the home often marks the beginning of symptoms of jealousy, but in many cases, the child who becomes jealous does not show this attitude until the new arrival is above a year or two in age. Many parents often take many pains to "prepare" an older child for the advent of a new baby by informing the child of its coming, trying to enlist the child's interest in planning for the new member of the family and trying to plant the suggestion, by one means or another, that the newcomer is not to be regarded as a rival. Frequently, plans of this kind fail to forestall jealousy. The very steps taken by the parents may betray their own uncertainties and may throw the spotlight on the new baby to such an extent that the older child senses the coming of a rival even before the new baby is born. This is all the more likely to occur if the child, for any reason, already is ill

at ease with his parents. The mere academic fact of informing the child that a new baby is expected is not likely to have much effect in forestalling jealousy (25). The success of efforts to forestall jealousy will depend not only upon the subtlety and naturalness of the methods that are used but even more on relationships that exist between the child and his parents. In homes where there already are several children whom the parents treat with the proper balance of affection and matter-of-factness, a child may be quite without forewarning as to the coming of a new baby and yet show neither surprise nor consternation when he learns of the blessed event. The question as to whether parents should make a special effort to inform a child that another baby is coming might even be debated. In recent years, there has been much emphasis on the importance of giving heed to every possible subtle sentiment that a child may have in relation to his parents. This solicitude often defeats its own purpose, for it singles out and makes an issue of matters which the child might otherwise take in his stride. Certainly, it seems to be as easy to take too many pains in trying to talk everything over with the child as it is to lean in the opposite direction.

One complication in the matter of trying to forestall jealousy is the fact that parents themselves cannot anticipate the effect that a new arrival in the family will have upon them. Sometimes the very child who was "unwanted" becomes the apple of his mother's eye. Moreover, parents, who after all are human beings, cannot possibly achieve a thorough and perfectly rational balance in the handling of their children. Sometimes an effort to "think out" and to weigh the merits of every practice used in the rearing of children serves only to confuse matters. A genuine affection on the parents' part for each member of the family will cover a multitude of practices, which, if evaluated singly, might be labeled as "bad." Certainly, there is no simple, practical rule of thumb that will solve all difficulties.

Sometimes parents, in an effort to achieve at least the outward forms of fairness, will, for example, adopt the policy of "two of

everything" if there are two children in the family. Such a policy may not only do an injustice to the children (each of whom may have abilities or interests which would justify special consideration and privileges) but may also, in a practical way, quite fail to forestall rivalry between the children (20). At best, a policy of supplying two tricycles, two sand boxes, two pairs of similar galoshes, and so forth, might not even begin to touch upon the real areas of friction and rivalry.

Jealousy is not, of course, confined to relationships between siblings in the same family, for frequently a child will be jealous of one or both of his parents, as manifested by protests when the parents display affection for one another or share conversations or activities in which the child cannot join. Again, older children frequently suffer from jealousy in their relations with teachers and other adults outside the home and with their associates.

The link between jealousy in early childhood and a jealous disposition in later years has not been traced adequately in scientific studies. Children normally lose their more obvious symptoms of jealousy as they become older and become absorbed in interests outside the family. On the other hand, some children maintain a jealous attitude into mature years, not only toward members of their own family, but sometimes even more toward their associates in daily life. Among adults, the degree of jealousy a person exhibits frequently bears little relationship to his relative status or power as compared with others; the person who has "arrived" and has achieved the outward semblance of success will sometimes begrudge the recognition bestowed upon an underling, much as a big hound bristles when his master pets a forlorn poodle.

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CHAPTER X

PLEASURE, AFFECTION, SYMPATHY

PLEASURE

The experiences which we designate by such names as pleasure, satisfaction, joy, contentment, and the like are difficult to define or describe in terms of overt behavior. As a gesture toward objective description, one might label such responses as "positive," involving no effort to avoid, reject, or overcome the condition that prevails but, instead, involving acceptance, approach, acquiescence, or action to further and prolong the condition. In contrast are the conditions that involve "negative" responses, as in anger, fear, or pain.

An effort has been made also to draw an objective distinction between pleasant and unpleasant emotional states in terms of the activity of parts of the nervous system, but this distinction cannot be applied in a thoroughgoing way.

Some organic reactions have been found to be more or less characteristic of pleasant emotional states. When in an agreeable frame of mind, one will tend to relax rather than to grow tense, to lean forward rather than recoil; and there will be an extension and expansion, rather than a flexion and contraction of the muscles (Dearborn, 4). An example of the muscular accompaniments of satisfaction is given in an experiment by Goodenough and Brian (7) in which children were tested while throwing rings upon a peg. When a child, to his joy, made a "ringer," the exuberance affected him so much that, on the next trial, he was likely to overshoot the target. A somewhat similar result is given in a study in which students were asked to draw lines on paper (Remmers and Thompson, 12). When requested to think about pleasant events, they showed an involuntary tendency to draw longer lines than what they were supposed to reproduce; when dwelling upon unpleasant thoughts, they involuntarily drew shorter lines.

This dynamogenic effect of pleasant emotional stimuli has much significance in daily life. We see these effects illustrated in the finding that praise and reward usually promote efficiency more than do reproof and punishment. The praise, inasmuch as it does not fall upon deaf ears, may entail an actual increase in energy and action. Conversely, the condition of the body may in turn affect one's susceptibility to emotion. If a person's muscles are already tense, he will start more violently than usual at a loud sound and report a greater feeling of shock than when he is relaxed. We see other illustrations of such happenings in the observation (Goodenough, 6) that children are more irascible after a poor night's sleep or when they are suffering from digestive disorders or are fatigued; the degree of tension induced in the child by one emotional stimulus will lower his barriers to other irritations. On the other hand, if the child is in a relaxed state or is already bubbling and expansive, his laughter rings louder and his smiles are freer when some new engaging stimulus is placed in his way. The organic background of joy, like the organic background of rage and fear, has indeed an important effect upon the way in which a child will respond to a new stimulus. But an observer cannot judge the tonus of his muscles or gauge the amount of glandular products circulating in his blood. Such unseen internal conditions account to a large degree for the fact that a child will sometimes be pleased and at other times will show irritation in response to the same external stimulus.

Conditions Underlying Pleasure. Satisfying conditions range from stimulation of specific sense organs to conditions involving the free flow of activity. Whatever may be the underlying cause, it seems, as a practical matter, that pleasure often is associated with sheer activity. The infant coos and gurgles, exercises his voice, kicks with his feet, manipulates convenient objects with his hands, ventures into creeping and crawling and walking, and, at a later age, essays many activities apparently through his own spontaneous impulses. Whether there is as much pleasure in his activity as his movements seem to indicate, we have no way of

telling; but at least it is true that it is not necessary always to prod the normal child with stimuli from without in order to keep him busy. Like the healthy puppy who frisks playfully even though no fleas are biting him, the child appears to obtain pleasure simply by being active.

As the child becomes older, his activities increase in scope, and the occasions that may produce pleasure increase accordingly. In time he becomes able to respond in terms of long-time ambitions and to gain satisfaction from subtle indications that his plans are being advanced or that his desires will be gratified.

The pleasures and satisfactions involved in uninhibited and successful activity can be noted in all aspects of the child's behavior. Sometimes, as noted above, action may be accompanied by exuberant outbursts of apparent joy, but more often the expressions are more subdued. We see signs of this "activity pleasure," not simply in connection with motor activities, but also in other connections. Indeed, the exercise of any capacity may be a source of satisfaction. A child will, for example, exercise his capacities for fear by taking long chances or by seeking vicarious stimulation through stories and pictures. He likewise "plays" with anger, by entering into games that involve mild forms of hostility and conflict; and he may deliberately expose himself to situations that are potentially annoying, as when he begins a fracas in a playful mood, knowing from past experience that the game may turn into a real fight, or tries, without apparent underlying rancor, to get a "rise" out of his parents or teachers, or invites thwarting by tackling a difficult project that he knows he cannot handle. In like manner, satisfactions may come from the exercise of his capacities for social activities and his intellectual abilities.

This matter of satisfaction through activity overlaps with the large topic of children's interests and factors affecting their interests. This topic is treated in another chapter, but certain points may be emphasized here. First, there is the fact that, although a project is likely to produce dissatisfaction if it definitely is beyond a child's powers, it is likely to be most satisfying if it con-

stitutes something of a challenge. Unless a child is relaxing from previous activities or is going through routines that he has come to accept as an inescapable matter of course, mere repetition soon loses its appeal. This can be observed in the boredom frequently shown by children who have attended a nursery school or kindergarten for two or more years and have mastered most of the projects which the school affords; it appears likewise in the boredom sometimes shown by veteran camp children, who are several strides ahead of their peers; and especially can it be noted in the average classroom, where much of the time of a more capable child is spent in idling. If the facts could be ascertained, it is likely that, for every child in school who is dissatisfied because the work is too hard for him, there are several children who are bored, if not actively dissatisfied, because the work is not sufficiently challenging. Such boredom can easily be mistaken for surliness and even for lack of social adjustment. Thus a child who had seemed apathetic and something of a "fringer" during the latter part of her stay in nursery school and kindergarten blossomed forth with new interest and vitality when she moved on to the first grade and got her teeth into reading and other school projects.

It would be impossible, of course, to arrange matters so that everything which occupies a child's time is so scaled and varied as to continue to serve as a challenge to his growing abilities, since a large proportion of the activities of daily life, both during childhood and adult years, consist of more or less routine chores that one must learn to take in one's stride. Failure to adjust to this fact may become a source of much dissatisfaction, but the situation is even worse when everything in the day's activities becomes a matter of uninteresting routine. This problem is likely to be more acute in adult years, after the individual is pretty well established and finds that his daily round of duties no longer challenge his powers. Regardless of the importance of his duties in the larger scheme of things, he may find them boring; and there may develop, as happens with many adults, a sense of futility, accom-

panied by a search for palliatives that range all the way from drinking and romantic escapades to the development of a stimulating hobby or avocation. Much worse, of course, than the condition of boredom in an adult who has an occupation is the plight of an able-bodied person who has no occupation.

Chronic and pervasive boredom of the sort sometimes found in adults is not likely to occur in a child, for so much still lies ahead of him and he is constantly meeting new experiences; the frontiers of his world are still wide open, so to speak. But the child and his activities have a definite bearing upon the adult problem, for the resources for satisfaction through activity which an adult possesses in his thirties and beyond are much influenced by his training and experiences as a child. Many adult hobbies and avocations first began to flower early in childhood; then, perhaps, they were dormant for a time through adolescence and youth, only to grow again in later years. Indeed, activities and skills which a child exercised only because he had to may, in later years, be revived with enthusiasm, as when a person who worked in the garden reluctantly as a child later, as an adult, picks up his shovel and his hoe and goes joyfully to work.

Since large numbers of adults are quite contentedly absorbed by occupations or avocations that have been acquired during mature years, the foregoing does not imply that activity pleasures of adulthood are restricted to enterprises into which the individual was introduced as a child. Other things being equal, however, the child who is initiated into a variety of projects and skills that not merely serve the interests of the moment but can be utilized in later years will have an advantage.

AFFECTION

It is a good deal easier to sing about love as the sweet mystery of life that rules the world than to write about it in cold blood. One difficulty is that the term is used with so many connotations, ranging from sexual desire to sentiments of loyalty and devotion that seem to involve no ulterior motives. Another difficulty is

that in theorizing about love in children adults are likely, perhaps more than in any other sphere, to attribute to children reactions which they themselves experience. Thus, when a baby nuzzles his mother's breast, his behavior might be interpreted as a sign of affection, while, actually, his sentiments may be confined pretty much to his gastrointestinal tract. When an adult experiences strong feelings of affection as he feeds and cares for a child, he is in a mood to accept, without intervening logic, the conclusion that the child is as much in need of love (as something extra apart from being fed and cared for) as the adult is ready to bestow it.

Varying Interpretations. Since we know so little about the love life of the infant, we are disposed to fill in the gaps with our own interpretations. These interpretations take the form not simply of attributing much to the child that no one really can be sure of (as when it confidently is stated that "love and hate are there from the very beginning") but also—again in terms of adult theories—of concluding that since we do not understand love it does not exist. One species of this form of interpretation is the claim that what passes for the beginnings of love and affection actually is a conditioned response, based upon the satisfaction of a child's hunger for food and upon the various attentions that relieve him from distress. According to this view, a child loves his mother, if at all, largely because he loves his milk and his mother is the source of it. He comes to love his father, likewise, and maybe his brothers and his sisters and his uncles and his aunts, because they too, in time, minister to the child's wants and become associated with comfort and relief and the furtherance of his desires. The concern which the child has for these comforts extend to those who supply them, just as his fears may extend to an object associated with an event that frightened him. This line of interpretation may be carried farther; for as the child grows older, the occasions in which other persons and surrounding circumstances may further his desires and bring satisfaction, and thus enlist his affection, increase apace.

This latter interpretation, which implies that a child's affection

for other persons and things is, in effect, merely an extension of his own "selfish" concerns, seems to square with many developments that can be observed in everyday life; but as stated, it represents only a part of the story. Although learning and association obviously play an important role in determining whom and what a child will be fond of, quite as important is the fact that the child has the potentiality for fondness and concern for persons and things. This potentiality is a feature of his original nature.

The child has this potentiality not only for affection toward intimates who minister to his more or less self-centered desires, but also for affection of an altruistic character. To be sure, one might argue at length that what appears to be altruistic affection is only an extension of self-love. An extreme example in support of this contention is that of a rejected suitor who quickly shifts from protestations of love to impulses of hatred and revenge. Likewise, in milder form, an adult sometimes is angered when his advances toward a child, ostensibly springing from true affection, are not reciprocated; and sometimes it can be observed that a child who is rebuffed when he tries to caress another will promptly hit and pinch. Examples of this sort could be multiplied, but such expressions do not represent all that falls under the heading of affectionate behavior, and the issue as to whether all concern for others is an extension of concern for self is not a crucial one. In the first place, a thoroughgoing distinction between self-love and altruistic love cannot be made; concern for self and concern for others are not discrete but complementary. Second, even if affection for others did originate in concern for self, such affection can go to such lengths of devotion and the sacrifice of immediate personal ends that it is tantamount to affection of a genuinely altruistic sort.

Expressions of Affection. The first prominent signs of affection are not those which the baby displays toward others but those which others display toward him. As noted in an earlier chapter, under normal circumstances, even if there has been no evidence of anything resembling a parental instinct before a child is

born, no definite longing for an offspring, the child's birth is likely to touch off affectionate impulses in the mother; and the father, although he is more of a bystander, is also likely to be affected in ways that are new to his experience. Except where illness or other disorders prevail, earlier reasons pro and con on the subject of having a baby—such as the plea of religious duty, social conformity, a desire to hold the husband or the wife, the need for someone to carry on the family name, and so forth—tend to be forgotten, at least for a time. Oftentimes, a mother's previous indifference or even opposition to the child's coming is changed to passionate devotion once the child is born and seen and held. To be sure, many factors other than pure instinct play an important role in this response,¹ but the important thing is the readiness with which there is displayed "responsiveness to the looks, gestures and cries" of the infant; an impulse to perform comforting acts in response to "childish signs of pain, grief and misery," and, in time, to find a delight in "childish gurglings, smiles and affectionate gestures."²

An infant very early in life welcomes the experience of being held and fondled, and as noted in a previous chapter, he soon actively reciprocates human contacts—as when he smiles at the approach of his mother or later laughs and shows signs of affection in many playful ways. In due time, he also exhibits attachments to children of his own age. As noted earlier, under normal circumstances, his friendly responses to other children in time to come outnumber overtly unfriendly acts, even though he may at times display an ample amount of aggression and resistance. In

¹ The term *instinct*, which flourished in psychological writings some years ago, has gone out of vogue, largely because forms of behavior that once were regarded as instinctive or inborn have been found to be influenced considerably by acquired habits. The term has not been used much in this book, not because of any particular prejudice against it, but partly for the sake of using terms more commonly accepted at the present time and partly because of the distorted meanings attached to the term in popular usage. It is quite possible that psychology is reaching the end of the anti-instinct cycle, however, and that the basic concept denoted by the term will be revived, in a modified form and probably under a different name.

² The foregoing is a partial rephrasing of a description by Thorndike, in 1913, of the maternal instinct. The account includes also the following: "To a woman who has given birth to a child, a baby to see, to hold, and suckle is perhaps the most potent satisfaction that life can offer; its loss the cause of the saddest yearning" (14).

time, he forms many attachments to persons and things. He shows delight at the homecoming of a relative or the visit of a neighbor; he shows acute concern, sometimes a high degree of terror, when it appears that harm is befalling a member of his circle. Likewise, after the age of a year or so, a child is likely to form a strong attachment to inanimate objects and animals—a certain blanket, a cup, a spoon, a little kit, an old sweater; he may treasure an old teddy bear, a tattered doll, or an old box with a devotion stronger than ever is won by newer and costlier possessions. His affections may embrace the family dog and cat and other animals, extending in time, to equipment about the home; the old family automobile may find a place in his heart, just as did the old gray mare or the old oaken bucket of an earlier generation. Through pleasant associations of various kinds, such objects of a child's affections come to have a value that quite surpasses their intrinsic worth or their immediate utility.

The course of the development of the normal child's affections for his brothers and sisters has not been studied systematically from the developmental point of view over a period of months and years. Generalizations concerning the development of affection between siblings are likely to be especially misleading if they are based upon the testimony of maladjusted adults or upon the study of children who are being treated for behavior problems. Interestingly enough, emotional factors in the relationships between siblings has been approached largely from the point of view of evidences of jealousy, discord, dominance, and aggressiveness, rather than from the point of view of ties of friendship and affection. Through focusing only upon evidences of hostility and rivalry, one can readily obtain a distorted picture of the relationships that exist and fail to notice that two siblings may be genuinely fond of each other, even though they bicker a good deal of the time. Indeed, two children who seem to be especially contentious in their everyday relationships may have more affection for one another than another pair who get along quite peaceably by holding aloof. Two children who fight quite vigorously at

home may unite loyally against aggression by an outsider, and either one may, on occasion, go to great lengths of devotion. In healthy, alert children, friction and occasional open hostility are normal phenomena. Their presence does not denote genuine incompatibility; nor does the fact that such children at one time fight and at another time go out of their way to help each other or grieve at one another's hurts and misfortunes mean that the children are chronically torn between conflicting feelings of hatred and love. To be sure, such ambivalent attitudes may exist in some cases, just as the balance between affection and hostility may vary considerably in different sibships. The home environment may produce strong hatreds, just as it may produce strong ties of affection.

In a large family, varying degrees of affection may develop between the different members even when all get along quite amicably. Thus, each of the older children may "adopt" one of the younger ones as his or her special favorite, or two children near each other in age may become especially loyal to one another, share candy and other goods and never tattle about each other to the parents. Special loyalties of this kind may persist over a period of several years, and may continue into adult life, but by reason of changing interests and other factors, a complete shift in such alignments may occur in adult years.

Practical Implications. A systematic study of affectionate behavior in children would undoubtedly uncover much information that would be valuable for the understanding of children and that would have important educational and social implications. It is not unlikely that such study would show that children have greater capacity for affection and concern for others than usually is assumed in our present ways of dealing with them. From the point of view of larger adult affairs, it is conceivable that a different emphasis in the education of children at home and at school might utilize many resources that now are more or less ignored. In contemporary social and political strife, the rallying cry of groups working for this or that cause seems more frequently to

be one of hatred for those whom the group opposes and who stand in the way of the group's self-aggrandizement than one of friendly concern for those whose lot the group ostensibly is seeking to improve.

Children, in common with older persons, want affection. Security in the affection of their elders is highly important to the children's happiness and normal development. A child who is denied parental affection, or who is accepted less wholeheartedly than his siblings, may encounter many difficulties of adjustment and may become the prey of jealousy and many anxieties. In studies of the mental hygiene of "problem" children it has been observed that the chances of successful treatment are considerably lower in the case of a child who is rejected than in the case of a child who enjoys the full affection of his parents (16). As noted in an earlier chapter, genuine concern does not rule out an appropriate display of firmness, practicality and occasional expressions of irritation in dealings with a child. A child faces a difficult situation, however, if his elders, as a matter of self-indulgence, bestow or withhold affection according to passing whims or carry their sentimentality to such lengths that they overindulge the child.

A child's experience of affection in the home environment may have an important influence upon the development and expression of his own affection for others. As the normal child grows older, he acquires many loyalties outside the home, whereas originally his attachments were almost entirely centered within the home; he will be handicapped if his attachment to one or both parents has become so strong, and involves so much dependence, as to prevent him from acquiring whole-hearted interests in other people. A child who is thus bound is likely sooner or later to encounter difficulties such as excessive jealousy, homesickness, and difficulty in winning full acceptance by others; he will also have fewer resources for meeting the shock that comes with the loss of a loved one. On the other hand, lack of the experience of close ties in the home and of expressions of feelings of affection may likewise

be a handicap in later life, especially when the individual reaches the age of readiness for courtship, marriage, and family life.

When young children are questioned as to whom they love most, the mother is named more frequently than is the father, by both boys and girls, but many children will report that they love both parents equally much. In a study by Simpson (13), children aged five to nine years were questioned directly as well as indirectly (for example, a picture of a man and a woman was shown to them, and they were asked to point to the one they liked best) concerning their preferences. In response to the direct question: "Whom do you like best at home?" at the end of the interview that was held with each child, 69.6 per cent of 250 boys named their mothers, 22.4 per cent named their fathers, and the remaining children named both father and mother (with the exception of one boy who named neither). The girls, likewise named their mothers most often (61 per cent), but a slightly larger number of girls than of boys named the father (28 per cent) or named both father and mother (10.4 per cent). A higher percentage of preference for the mother than for the father appeared at all age levels, with one exception (the five-year-old girls named fathers more frequently than mothers). These results in the case of the girls do not indicate that children are likely uniformly to prefer the parent of the opposite sex, as was found in a study of adults (8). Simpson discusses factors that might have influenced the children's replies, including the fact that the investigator was a woman (although on this point it may be said that much the same trends have appeared when the interviewer is a man, as was the case in an informal study conducted by the writer), and the possibility that girls might be reluctant to express a preference for the father (on this point it may be noted that if this were an important factor one might expect that more of the girls would hedge by naming both the father and the mother).

Among children, as among adults, one sometimes finds individuals who are very strongly attached to the parent of the opposite sex. A boy's devotion to his mother, and a girl's to her

father, may be so influential that the characteristics of the favored parent serve as a standard or model when the individual, in adult life, looks for a husband or wife. Needless to say, regardless of the degree of affection that exists between child and parent, an individual's loyalties and affinities with other persons in later years will be influenced in many ways by factors in his relationships with his parents. Individuals differ considerably, however, in this regard.

SYMPATHY

In a literal definition of sympathy, the emphasis is on feeling—"suffering with" another, being affected by and being sensitive to another's plight or condition—as distinguished, say, from cooperation, where the literal emphasis is on doing rather than feeling.¹ As usually employed, however, sympathy denotes a state of feeling for another as betokened by expressions of such feeling in ways ranging from meaningful silence to ostentatious condolences and from inept gestures to deeds that help somewhat to assuage another's distress. In the case of adults, a definition of sympathy in overt terms alone would be quite difficult, for the overt expression of sincere fellow-feeling may range from acts that bear the stamp of kindness to superficial gruffness, hilarity, and apparent unconcern. In the case of children, it likewise is difficult to study sympathetic behavior; for, although many young children express their emotions more freely than will be the case at a later age, they are less able than adults to describe in words the nuances of their feelings or even, in the case of sympathy, to formulate their impulses in terms of appropriate action.

In the study by Murphy cited in Chapter VI, it is pointed out that the more closely knit the structure of a society becomes, "the more demands are put upon individuals to respond to the needs of others." She further points out that sympathy, "when it is sensible and genuine," not merely a "projection of the sym-

¹ The topic of sympathy, from the point of view of its manifestations in social situations, is treated in Chapter VI.

pathizer's anxiety" for his own safety and security or "a way of dominating others, is intimately connected with all other responses of a friendly and constructive nature that are the foundation of a cooperative society" (11).

Many theories might be set forth to account for the development of sympathy, but available data give no more of an explanation for behavior of this kind than for any other form of human behavior. It might be possible, for example, to show in a schematic way how, according to the principle of the conditioned response, distress in another becomes meaningful and touches off an ameliorative response by virtue of association with distress which one has endured oneself. However, as far as origins of this behavior are concerned, the important factor is not so much the particular principle by means of which it is elicited but rather the fact that there are potentialities for sympathetic behavior that tend eventually to be aroused to a greater or lesser degree. These potentialities seem to be no more "natural," on the one hand, or "acquired," on the other, than do the potentialities for other somewhat contrasting forms of behavior, such as anger or aggressiveness. Furthermore, whatever may be the natural or inborn roots of sympathy, it is clear from the study of children that the factors of both learning and maturation have an important influence on the ability to perceive and discriminate distress situations, the ability to respond to such situations, and the varying degrees of sensitivity and responsiveness which an individual exhibits in different situations.

In discussing the background of the children in her study, Murphy noted that the experiences provided by parents for the development of sympathy varied decidedly in the case of different families. The mother of one child, for example, allowed her child to have contact with nothing but the most objective, unemotional stories about children like himself, who got up in the morning and brushed their teeth and went for a walk in the park; materials that included some emotional emphasis, such as fairy stories or Mother Goose rhymes, were taboo. At the other ex-

treme was a child whose father went out of his way to help the youngster to come into contact with everyday events in a big city, and no effort was made to spare the child from witnessing events that might be encountered on an excursion through the city, such as the sight of a burning building or an accident on the street. Most of the children were somewhere between these two extremes, although it was noted that many parents in the particular group that was represented in this study appeared to endeavor to guard their children from emotional experiences and expressions, and some of them endeavored to remove emotional stimuli from the children's lives even to the extent of opposing traditional stories and songs for children.

Concerning the development of sympathy in children beyond the preschool age, we have relatively little systematic information. As Murphy has shown, factors influencing the impulse to be sympathetic and to manifest sympathetic behavior are interwoven with other factors in the child's social and emotional adjustment. The topic overlaps other areas of experience, such as affection and motives involved in coöperation, and counteracting forms of experience, such as animosity and aggressive tendencies.

CRYING AND LAUGHTER

Brief incidental attention should be given to laughter and crying because of their frequent occurrence as expressions of emotion. Laughter, of course, is likely to occur most frequently when a person is in a pleasant frame of mind, while crying usually denotes the opposite; but there are many exceptions to this general rule.

Crying. Crying is usually present at birth, and most of the infant's cries are a feature of his general, undifferentiated activity. However, crying becomes more differentiated in time, as we have seen. As the child grows older, he learns to make use of crying as a means of getting his way, just as he may indulge in temper tantrums for the same purpose; some children become so accustomed to solving problems by means of tears that they often use

the same solvent when they have reached adult years. But, because of social restraints, crying usually becomes more and more a private matter as one grows older.

The crying of sixty-one infants was studied by Bayley (1) in situations which included mental tests, tests of reflexes, motor tests, anthropometric measurements, and so forth over a period of several months. These tests involved many conditions and persons that were unfamiliar to the child.

The time spent in crying amounted, on the average, to fifteen per cent of the total examination time. Crying diminished somewhat after the first month, reaching its lowest point at four months but then increased somewhat during the rest of the year. During the first months of life, crying resulted mostly from internal causes, such as bodily pain and distress; during later months, the external environment, fear of the strange situation, and dislike of unusual handling became relatively more important. There was a good deal of consistency in the relative amount of crying of the individual infants from month to month, particularly during the second half-year; but Bayley indicates that the data do not tell whether this consistency is due to innate factors or to early environmental influences. There was no relationship between the amount of crying and mental scores, socio-economic status, birth weight, birth order, or sex. Bayley observed that, as judged by his overt behavior, the infant's affective responses to annoying stimuli gradually become organized into patterns similar to those of adult emotions.

The degree to which a child will resort to tears depends to a large extent upon his surroundings. A child will often give vent to loud and lachrymose lamentations at home, while similar hurts may produce only a Spartan fortitude when he is out among company. This observation illustrates the degree to which the child's behavior may vary in different situations as the result of specific learning. In a study of the laughter, smiling, and crying of over fifty children between the ages of two and five years (Ding and Jersild, 5) only sixteen instances of crying were noted during the

period of observations, while, in the meantime, there were several hundred instances of laughter. The crying occurred more frequently as a sign of anger, as when a child was pushed over or deprived of a toy by another, than as a sign of pain. If the child tumbled through his own fault and apparently hurt himself, he was less likely to cry than if an older child gave him a painless shove.

In time, it comes to be expected that boys will cry less than girls, and the boys more or less fall in line with this expectation, at least in adult years; but individual differences within each sex in the tendency to cry are considerably greater than are the differences between one sex and the other. An unpublished study by Juliet Bell (2) offers interesting findings concerning the lachrymosity of boys and girls when placed in a trying situation. Bell undertook the heroic job of observing and recording the behavior of dentists and their child patients during dental treatment. In observations of about a hundred treatments, involving children aged three to nine, Bell found no significant difference between boys and girls in their tendency to cry.

Laughter. In a study of infants, Washburn (15) found the first appearance of laughter at twelve weeks as a response when the experimenter bent over the child and made a "chirruping" sound. Among the stimuli used to provoke laughter were games of peek-a-boo, sudden reappearances from under the table, tickling, rhythmical hand clapping, and the like. Most effective in producing laughter was the "threatening-head" stimulus: while holding the child's hands, the experimenter shook her head playfully from side to side and then ducked rapidly, until her head came into contact with the center of the child's body, whence it was immediately withdrawn again. Laughter in response to this action appeared at sixteen weeks.

In the study of children aged two to five cited above (5), laughter occurred predominantly in connection with some form of motor activity. The young child seldom simply sits and laughs. Many of the conditions which have been proposed in theories of

laughter in the case of adults were not confirmed by the behavior of children. It did not appear that such factors as derision, or feelings of superiority because of another's coming to grief, or vindictiveness played a prominent part in causing children's laughter.

The child learns to use laughter in his social contacts with others. He is more likely to laugh when with others than when playing alone, more when with friends than with strangers; and he is also more likely to laugh at the antics of those whom he knows than at similar behavior in strangers.

A study of Kenderdine (10) combined observations of preschool children in experimental situations with observations of the children during their free play. As has been observed in other studies, laughter occurred most frequently when the child was in the company of other children and as an accompaniment of his own movements, rather than as a response to the movements of other persons or things. Four toys which might be expected to cause some amusement were exhibited to the children, but nearly all of them showed interest and curiosity rather than amusement (the toys were a spotted dog with movable ears and tail, a spotted rubber dog that squeaked and that had movable head and tail, a fur-covered clown hung on an elastic string, and a jumping jack). There were a hundred occasions in which the children came upon one of these toys and had an opportunity to play with them, but in only twelve instances did the children really laugh; smiles occurred in sixty per cent of the instances. At two years, laughter in response to motions made by the child himself or others was highest in frequency, followed by laughter in response to socially unacceptable situations. At three years, the latter situations led the former in frequency. Other situations that provoked laughter included noises made by the child himself or others; grimaces made by the child himself or others; pleasure in accomplishment, general well-being, word play, imitative laughter, and inferiority in others.

In an interesting study by Justin (9), children aged three

through six years were exposed to a number of situations that were designed to represent each of six prominent theories as to the cause of laughter. A brief identification of each theory together with an illustrative situation, follows:

1. *Surprise or defeated expectation*: There are three small buckets, one containing sand, one containing water, and one empty; each is covered with paper. The child reaches into the first to discover what it contains, then into the second. By this time, everything, including the experimenter's directions, has been calculated to lead the child to expect that the third bucket will also contain something; but when he reaches into that, he finds it empty.

2. *Superiority and degradation*: The experimenter, with an egg in one hand and a watch in the other, makes ready to boil the egg in a pot of water, but instead of the egg, he drops the watch into the water.

3. *Incongruity and contrast situations*: A doll is displayed, with eyes in the back of its head; a baby bonnet and a man's silk hat are displayed—the former is put on the adult experimenter's head, the latter on the child's head, and both look at themselves in the mirror; and so forth.

4. *Social smile as a stimulus*: While displaying pictures, the experimenter looks up and, with a smile and laugh, talks to the child about a happening earlier in the day.

5. *Relief from strain situation*: The child walks a chalk line, carrying a parasol in one hand and a potato in a spoon in the other.

6. *Play situation*: This includes a play on words, by means of a jingle; also physical play situations, with a jumping-jack, a tower which the child builds and then knocks down, and so forth.

All of these experimental situations produced smiling and laughter in some children at all age levels; in general, there was no large shift in the effectiveness of the various situations from one age level to the next, although the incongruity, superiority, and play situations became somewhat more laughter-provoking as age increased. The major change with age consisted not so much in

the appearance of laughter in response to a type of situation that previously was ineffective as in an increased tendency to laugh at more of the specific situations used to represent a given class of laughter-provoking stimuli. Six-year-olds laughed less than did five-year-olds. Justin suggests that this decrease may be due to a toning down or subduing effect associated with school attendance; all of the six-year-olds in the study were first-graders and most of them were studied in their own school building.

Justin found a positive relation between I.Q. and tendency to laugh, especially in response to incongruity. In the study by Kenderdine, cited above, it was also observed that the brightest children tended to laugh more than did children of average or somewhat above average I.Q.¹; but at later age levels, it is likely that the I.Q. will be related less to total amount of laughter than to specific situations that cause laughter.

SOME ASPECTS OF EMOTIONAL MATURITY

As noted in the foregoing, as a child grows older, he tends to become more moderate in the expression of his feelings, to inhibit overt signs of grief over personal misfortune and violent signs of rage, jealousy, and fear. This tendency toward more subdued response does not, of course, appear uniformly in all children, and the same child may show varying degrees of overt excitability, as when he customarily conceals his fears and no longer cries about physical hurts but occasionally shows explosive temper tantrums. The degree to which an individual, whether child or adult, moderates his display of emotion will vary also with the provocation: a person may normally be very self-controlled and yet "go to pieces" under severe stress. As noted earlier, a child is subjected to a good deal of pressure both from adults and, in time, from other children, to restrain his expression of emotion, especially his reactions of anger, fear, and pain. He is also frequently taught

¹ For a handy tabular review of earlier observations regarding situations that produce laughter in young children and descriptions of laughter situations at the preschool level, see Blatz, Allin, and Millichamp (3).

to be more subdued in his expressions of joy and in his laughter, although signs of pleasure usually are not frowned upon as much as are expressions of distress, and moderation of expressions of joy is treated more as a matter of good manners than as a matter of fortitude. Although the decline in outward expression of emotion does not necessarily mean that there has been a similar decline in feelings or emotional impulses, one sign of increased emotional maturity, according to the standards that prevail in our culture, is the ability to curtail the frequency and the violence of emotional outbursts such as may be found in the young child.

Normally, as a child grows older, he shows a decline not only in the more violent expressions of emotion but also in his tendency to call attention to himself and his own feelings by word of mouth or other means. The child who at three years called the attention of a visitor to a bandage on his finger may, at ten years, vouchsafe no word concerning his bandages and bruises unless he is asked (although privately he may hope that his wounds will be noticed). He has a greater capacity for suffering in silence. In like manner, the more mature child is less outspoken in expressing his likes and dislikes, especially for other people. The more mature child is also better able to work on his own interests without constantly displaying or talking about his handiwork to his elders and to remain silent and persevere when his work goes wrong. He will also surpass the young child in his ability to work toward deferred goals, rather than for the immediate gratification of a wish. Although he continues to feel affection for his parents, the more mature child has a range of interests and loyalties extending outside the home. Normally, with the widening of his interests as he grows older, he is less subject to jealousy. He also is better able to take account of the feelings of others.

Old and young alike desire security as well as the opportunity to do things for themselves, but the security provided by others is relatively more important to the young child by reason of his helplessness, while opportunities to do and to win things for himself gain in relative importance as the child grows older, although he

never outgrows his feeling of dependence upon others and his need for their good will.

As noted in the discussion of anger and fear, there are changes with age not only in the expression of these emotions but also in the conditions that provoke them. By virtue of his increased competence and familiarity with his surroundings, the older child normally will show less fear of everyday objects, places, and people, and of common animals, noises, and happenings. He also is able without anger to dispose of many physical obstacles in his routine activities and his everyday play. He never, of course, becomes immune to annoyance at frustrations in his everyday activities, but the older person tends to be more even-tempered in dealing with such provocations. There is evidence of immaturity if an older child, by reason of lack of skill or overdependence upon adults or other evidences of lack of resources within himself, is angered or frightened, or cries and complains in response to situations which normally do not present a problem to children of his age. On the other hand, as the child's interests and his contacts with the world expand, he will be affected by events that previously did not cause concern. A boy of fifteen years who is interested in making a good impression on the girls may become angry when he spots his necktie, but at eight years the same happening might have little effect on him. The change that comes with age does not consist in a decrease in emotional susceptibility so much as in the circumstances in which emotional responses are aroused.

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CHAPTER XI

THE GROWTH OF UNDERSTANDING

When we as adults watch an infant, we often wonder what may be going on in his head; what are his sensations and feelings; what is the nature of his awareness of contacts, sights, and sounds; what, if anything, goes on in his thoughts. Unfortunately, we cannot look upon the world from the infant's point of view, for our approach and our interpretations are so influenced by ways of perceiving and thinking that have developed through the years in our own experience. In the chapter dealing with the newborn child, note was made of some of the child's early reactions, and it was pointed out that he has quite a range of responsiveness to conditions that impinge upon him, but just how his experiences are organized we do not know. When, however, we find that his responses show a good deal of diffuseness and lack of co-ordination, it would appear that perhaps his "mental" experiences, whatever they may be, similarly lack the differentiation and discrimination that are found at a later time. Likewise the special meanings that come to be associated, as time passes, with the happenings of everyday life are also lacking.

SIGNS OF INCREASING AWARENESS AND ALERTNESS

A glance at Table XXXVII, on page 474, which is drawn from a study by Bayley of the mental growth of young children, will show many landmarks in the development of the child's ability to discriminate and to react adaptively to more and more events in the world about him. Some illustrations of changes with age in the child's discrimination and awareness in his social responses are presented in Chapter VI. In Bayley's summary, we see, for example, the child giving momentary heed to a dangling ring at about two weeks, more prolonged regard at a month, regard with

manipulation at about three months. An expansion in his reaction to events that do not directly confront him can later be seen when he turns his head toward the direction of a sound, or keeps his attention fixed upon an object that has been covered or hidden. The summary likewise illustrates the development of discrimination, perception of form, evidences of memory, and increasing ability to understand and to use symbols, as in language.

MEMORY

A precise distinction between mental phenomena variously labeled "memory," "perception," "reasoning," and so on cannot be made, since all have features in common, but for convenience, these terms may be used in illustrating some of the landmarks along the way of mental growth. Memory of a sort is involved in any response in which behavior has been modified by virtue of past experience, even though the child may have no definitely formulated or conscious recollection of what has gone before. We see such signs of modified behavior very early, when the child, for example, ceases crying at the sound of someone's approach or adjusts himself to being lifted; later come evidences such as signs of discriminating between a familiar and an unfamiliar face; later still, within the first year, the child may give signs of pleasure when a person with whom he has had daily contact returns home after a short absence.

The development of ability to retain and act upon a past impression, even though the objective stimulus is absent, represents an important feature of the child's widening mental world. We see signs of this when a child keeps his attention fixed upon an object that momentarily has disappeared from sight, as when he proceeds directly to get hold of a spoon that has been covered with a napkin, or keeps his eyes fixed on the door through which a person has disappeared, or redirects his attention to an object from which it has been distracted for some moments. An illustration of this "delayed reaction" has been given by Hunter (41). A thirteen-months-old child was seated within reach of three boxes and her

attention was attracted to a toy which was placed in one of the boxes, but she was momentarily restrained from getting it. It was found that, after delays varying from eight to twelve seconds, she would choose the right box over seventy per cent of the time.

Another method of studying this response is to hide an object and then divert the child for a period of time. According to Hetzer and Wislitzky (38), more than half of a group of children at fifteen months could be diverted from an object for five minutes and still give signs of recognition when the object was presented again; at two years, the period of delay may be almost twenty minutes. The interval will of course vary with different children.

Delayed responses in children between the ages of two and five and a half years were studied by Skalet (75). In one experiment, a cookie was hidden in the presence of the child under one of three plates, and after a time the child was once more brought before the plates and asked to find the cookie. After delays ranging from one to three days, sixty-five per cent of the children's responses on going to the plate were correct. The proportion of correct responses fell as the delays were lengthened. Older children and children with higher mental ages remembered longest.

In a study of the latent memory span of two- to four-year-old children, Mallay (56) measured the extent to which children could remember over a period of time the technique involved in opening a series of boxes. When the boxes first were presented, the children were either shown and told how to open a box or were left to find the way themselves by trial and error. Attractive toys were enclosed in the boxes to serve as an incentive. A child received credit for remembering if, on a later presentation of a given type of box, he directly proceeded to execute the necessary movements for opening it. In the case of the easiest problem, involving a relatively simple movement of pushing, pulling, or lifting the lid, the number of days during which the children remembered the correct technique, without fumbling or redirection, ranged (according to the nature of the original directions and amount of experience) from about three to eight days in the case

of two-year-olds, from about nine to fifteen days in the case of three-year-olds, and from about seven to twenty days in the case of four-year-olds. In the case of the two-year-olds, it was found that verbal directions accompanying a demonstration were especially helpful in directing the child's attention to the operation and to help him to grasp the solution of the problem.

From an early age, children show many evidences of memory in the details of their everyday lives, even though later they may not have clear recollections of day-to-day happenings. Sometimes a child will show that he recalls a happening over an extended period of time, as in the following instance: At the age of two years and two months, a child (who at that time was precocious in her language development) was having a sun bath in her carriage under a cherry tree and was given green cherries to play with. The next year, when the cherries were again green on the tree, she once more was given a bunch to play with, whereupon she exclaimed: "Oh, Mummy, remember when I used to play with these while I was having a sun bath in my carriage?"¹

Early Memories of Adults. When adults are asked concerning their earliest memories, many are unable to recall anything earlier than the third year, while some describe memories extending back into the second and first years. Many early memories appear to be unpleasant. In a collection of several hundred early memories of adults and eleven-year-old children, Blonsky (6) found a preponderance of memories of pain, punishment, death, and unpleasant circumstances, as compared with memories of pleasant events. The children reported more recollections of the first and second year of life than did adults. Unpleasant memories were also found to predominate over the pleasant in the reports of several hundred students who were studied by Gordon (27). The average age at which the reported remembered events occurred was over three years.

¹ For a review of records of early evidences of memory, based upon biographical records of children, see Hurlock and Schwartz (42). A study by Bryan (10) deals with the organization of memory in young children.

When children of adolescent age report their earliest memories, it has been found that a small number of persons report recollections of happenings that occurred between the age of a year and a half and two years, but the number increases at succeeding half-year levels, and the average age to which the earliest recollections are attributed is over three-and-a-half years (Dudycha and Dudycha, 20). In this study, again, it was found that the situations that were recalled involved emotional episodes, with fears occurring most frequently, followed by joy, anger, sorrow, and disappointment.

The frequency of unpleasant items among early memories does not seem to be due to a peculiar capacity to remember the painful more than the pleasant. In studies of adults, it has usually been found that a greater proportion of the unpleasant than of the pleasant events of the past are forgotten. The predominance of unpleasant items in earliest reported memories must be explained, it would seem, by the principle that the recall of an event depends, in part, upon the intensity and impressiveness of the original experience. The infant becomes accustomed to many events that might be regarded as pleasant, such as opportunities to sleep, receive food, play, and receive the attentions of adults; events of this kind become routine matters and usually do not occur as sudden and distinct episodes. On the other hand, such events as an attack of terror or of sharp pain and discomfort and events surrounding a death or tragedy in the family are likely to be more clearly demarcated, even though such distressing happenings occur much less frequently.

Even though it is of interest to investigate when a child begins to report conscious memories and to study the nature of these memories, we do not have to solve the problem in order to study his mental development. Indeed, most of the discrete experiences of the past lose their identity in the general process of habit formation. We cannot recall when we first were able to distinguish between the voices of different members of the family, or grew wary of a swinging door, or resisted the approach of a person who

handled us roughly. Most of our early motor skills, intellectual adaptations, and emotional attitudes are being formed whether or not we remember the original situation.

From a theoretical point of view, there is reason to doubt that the child's earliest experiences are of such character that they could be retained as conscious memories. When we consider the lack of coördination in the infant's early behavior, a lack so great that even many simple reflex patterns are imperfectly formed, it seems rather unlikely that clearly demarcated impressions take place within his frame. When we ask why the infant has no recollection of what happened during his early career, the answer seems to be that these happenings did not impress him as they would impress an adult. He needs to grow and to learn before he acquires the capacity on the one hand and the experience on the other to enable him to perceive and to catalogue events in the same manner as an older person. Moreover, until he has acquired the ability to use language he lacks an important means of formulating the experiences in terms of articulate symbols.

An example of the manner in which ostensibly meaningless impressions can leave their mark on a child is shown in an interesting study by Burt (13). Passages from Sophocles in the original Greek were read to a child (who had no other contact with Greek) when he was no more than fifteen months old; twenty lines were read to him daily for a period of three months, and at the end of each period a new selection was read. This reading was continued until the child was three years old. When he was eight and a half years old, the same passages, as well as new ones, were read to him; but he was now required to memorize the lines. To commit to memory new passages that never before had been read to him required an average of 435 repetitions, while an average of only 317 repetitions were needed for passages that had been read to him when he was a baby. Thus he showed the effect of past impressions, even of material that had been read to him between the ages of fifteen and eighteen months.

Again, when this child was fourteen years old, he undertook to

memorize Greek passages, some of which had been read to him before the age of three and some of which were new.¹ This time, the difference between the effort required to learn "old" and "new" material was appreciable but much decreased (12).

PERCEPTION

During the first three years of life, a child advances rapidly in his ability to discriminate between sizes and shapes, to judge distances and dimensions, and in his recognition of meanings associated with impressions that come to him by way of his eyes and ears and other senses. Examples of the development of a child's perception of sounds can be observed in many of his early social responses, as when he reacts differently for a time to angry and friendly tones and distinguishes between the voice of his mother and that of a stranger. In his response to sounds and to all other sensory stimuli, a child has much to learn before he can detect meanings that adults take for granted. A cracking sound from the ice underfoot means danger to the adult, while a child of two or three may be interested but recognizes no danger. The adult recognizes with alarm the sound of a tear in his clothes and steps aside at the sound of an approaching vehicle; if blindfolded, he judges by creaking sounds whether his footing on a plank is secure; he can judge, with some degree of accuracy, when a container into which liquid is being poured is nearly full; he braces himself to meet the force of the wind that he hears around the corner; he is able to distinguish many objects simply by their sound when they are struck or handled.

¹ The Greek read to the child before three years was literally and figuratively "Greek" to the child. Let those who maintain that all we try to teach the child or all the experiences that are placed in his way to promote his learning should be of "immediate functional significance" to him, "meaningful" and in response to "felt needs," take pause at this little experiment. Certainly no one would advocate that fledgling children should henceforth have lessons in Sophocles by virtue of this experiment, and the rule that learning proceeds best if it is meaningful and ties up with the child's own purposes still stands; but the factors influencing the child's incidental and deliberate learning in his everyday life, and the experiences which he accumulates, are much more varied and complex than anything that adults could take account of in their efforts to provide only projects which, from their limited point of view, are meaningful and "learnable" from the child's point of view.

Each such response is the fruit of many concrete experiences of the past; sounds previously occurring as part of a total situation are now effective as reduced cues.¹ As learning proceeds, an individual may hear in sounds a character common to many different situations. In time, he will be able to tell blindfolded whether an object that was struck is metal or solid earth; and he becomes able also to estimate, with some degree of accuracy, the relative size of the object from which the sound proceeds. A particular cue is met so often or is learned so well that it produces an appropriate response, even though some details associated with it have not been met before.

In this development, as in other departments of his mental development, the child's progress will depend upon three factors. One factor is his sensory acuity; to be able to learn the meaning of sounds, he must be able to hear them and must be sensitive to differences in sounds. Second, he must have experience in concrete situations. Third, he must have the capacity to learn. In the latter capacity, children differ widely. While two children are playing, they may hear a sharp snarl and in a moment be bitten by a dog. At a later time, one of them may be wary of a snarling sound, while the other, slow at catching his cue, gets into harm's way and is bitten again. In this simple episode, an essential feature of intelligent behavior is illustrated, namely, that the intelligent person is more alert in responding appropriately to reduced cues.

In his auditory reactions, as in his reactions to form, color, and other events, a child may be able to react in a discriminating way to differences even though he may not be able to formulate his response in so many words. Thus, in his singing, he may be able to reproduce correctly a series of tones of different pitch, although he is quite unable to name the tones or even to state correctly whether one tone is "high" or "low" or "up" or "down" in pitch, as compared with another (44, 82).

¹ For a systematic account of ways in which a part of a past total stimulus comes to function for the whole, see Hollingworth (40).

Cutaneous Space Perception. If a normal adult is touched on any part of the body, he usually is able to point to the locality where the contact was made; his localization is more accurate in some parts of the body than others, but he seldom fails to indicate the proper general area. When we squeeze the toe or the chin of a newborn child, we find that some of his movements appear to be directed specifically toward the point of contact, but his aim is often quite inaccurate. Whether this means that his cutaneous localization is poor or simply that his motor coördination is inadequate the experiment does not tell.

One procedure that can be used to study the ability to localize contacts on the skin is to stimulate a spot on a blindfolded child's hand by means of a blunt wooden stylus, and the child, with his other hand, then tries to indicate the spot where the contact had been made (Dunford, 21). The ability to localize has been found to be almost as accurate at the age of three years as at the age of fifteen. In a somewhat similar study of seven adults and four children, it was found that children were superior to adults in the ability to locate the spot where contact had been made (Renshaw, 69).

Another approach to cutaneous space perception is to test a person's "two-point limen." A pair of dividers can be used to make sometimes one, sometimes two, contacts on the skin of a blindfolded subject. The test is to find how near the two stimuli can be brought together and still be recognized as two rather than as only one. In adults, the two-point limen is a good deal wider on some parts of the body than on others. It appears that, in this response, children of school age score quite as high, if not higher, than adults in the fineness of two-point discrimination. In a study of a small number of subjects, children from six to eight were found to score higher than children of higher ages, up to the age of fifteen (Friedman, 25).

Even though this ability is present at an early age, the child still has much to learn in discriminating between various touch and temperature stimuli. It is only through past learning that one is

able to recognize, without looking, whether a cold object that is in contact with one's hand is dry or wet, whether the coin in one's hand is a nickel or a quarter, whether the material one touches is paper or cloth. In this field of perception, as in many other fields, much interesting experimental work with young children remains to be done.

Visual Perception. Numerous illustrations of the development of visual perception have been given in earlier chapters dealing with the child's motor and social development. During the first few months of life, for example, the child acquires the ability to discriminate between the appearance of persons and inanimate objects and to distinguish between familiar and unfamiliar faces. With the passage of time, his perception of form, depth, distance, dimension, and color are revealed in countless ways in his everyday activities, as he distinguishes between various articles of food and dress, creeps, and later walks to seen objects, correctly names objects that are similar in size but differ in form, and so forth.¹ As the child's visual perception develops, he becomes able to make finer distinctions between objects that he sees, and the meanings associated with visual impressions are influenced by experiences gained through other sense modalities.

In one of a series of experiments of visual perception of distance, two discs of equal size were used. One was kept at a standard, the other at a variable distance from the eye; and tests were made to find how small a difference in the distances of the two the subject was able to judge correctly. In another series, one of the stimuli was made larger than the other. As it proved, four-year-old children were more variable than adults in the acuity of perception of the relative distances of objects, but the difference in accuracy was not great (Updegraff, 81). Tests of younger children would perhaps show greater differences, but it is difficult to devise adequate tests of space discrimination for young infants.

¹ Some studies dealing in detail with the development of perception of form are listed in the bibliography (34, 50, 60, 62, 76).

An experiment performed with two- to five-year-old children by Emerson (22) illustrates a method of studying spatial orientation. The experimenter and the child each had a large easel, studded with pegs, and a wooden ring. The child watched the experimenter place his ring on a peg at a certain position and then tried to duplicate the act. The greatest amount of confusion in placing the ring occurred if the child had to make a complete turn (when his easel and that of the experimenter were back to back); less error occurred when the two easels stood at right angles. The children were most accurate when the two easels were exactly in line with each other. Children more frequently made errors by placing the ring to the right or the left of the position shown to them than by placing it too high or too low. The effect of age and past experience on such orientation was shown by the relative scores of the children; those between the ages of twenty-seven and thirty-one months made a score of 43.75, while those about two years older made a score of 59.24.

An illustration of the degree to which visual orientation is influenced by past training can be obtained by the observation of children's "space-order reaction." In one investigation, children between the ages of two and a half and five and a half were asked to point out and to name each of sixteen pictures that were arranged in four rows on a card (White, 84). Adults, when asked to do this, named the pictures from left to right, one line at a time, using the same order as in reading. Only one of the twenty-three children used the reading order; twenty-one used no regular order. The children also were asked to put a check in each of sixteen circles, arranged in four rows; and in this performance, fourteen children used no regular order.

The child of two or less appears to be a good deal less sensitive to color differences than an adult. His ability to distinguish colors develops more rapidly, however, than his ability to name them. In a study of color discrimination, children were called upon to match colored squares (15). Two-year-old children were correct less than half of the time in matching colors; they named the

colors correctly twenty-five per cent of the time. Six-year-old children, when tested with the same material, made an almost perfect score (ninety-seven per cent correct).

In many studies that have been made of children's and adults' color preferences, the results have varied considerably. Needless to say, however, the various connotations of color, such as red as a sign of danger or of ripeness in fruit and black as a sign of mourning, must be learned.

CAPACITY FOR ATTENTION AND CONCENTRATION

One important accompaniment of mental development is an increase in the child's "staying power" in keeping his attention concentrated upon a stimulus or project. This ability has variously been called "duration of attention," "interest span," "occupation span," and "persistence." Except in response to urgent physical demands, the young child's concentration span tends to be quite brief. When he fixates an object with his eyes, his regard is likely to be fleeting at first and to lengthen with time. Of course, the span of concentration is no unitary ability, for it will vary in different situations and depends not simply on the child's energies but upon his interests and motives. For this reason, an exact measure of increase with age would be difficult to obtain; the results would vary with different children and in different situations. It is possible, however, to trace the rise in duration of attention in some situations.

In one study in this area, Miles (59) measured the length of time children would continue to give sustained attention to a delayed stimulus. Each child was presented with a jack-in-the-box and asked to watch it until it was opened. The experimenter timed the child until he looked away. The average duration of sustained attention, according to this criterion, as exhibited by the children in this study was eight seconds at three and four years, about seventeen seconds at five years, and about twenty-eight seconds at six years. In a somewhat different approach, Shacter (72) timed children to see how long they would persist, without further

persuasion, at little tasks such as taking colored paper disks out of a box and laying them in rows across a table. On the simplest task used in the study, the average duration of attention ranged from a little over eight minutes at three years to a little over nine minutes at five years (the differences between three-, four-, and five-year olds was not significant, but there were large individual differences between children at each age level). The span was a few minutes longer in dealing with a somewhat more complex project. In other observations it likewise has been noted that differences between individual children in duration of attention in dealing with some tasks may be larger than average differences between children at various age levels during the pre-school period (5).

Another approach to this problem has been through observation of the amount of time children will spend upon a project, without interruption or turning to something else, during their free play. Table XXV summarizes results from three studies. It will be noted that the averages at any particular age differ considerably, due in part to differences in the situations in which the children were observed and also to differences in the criteria as to what constituted an "interruption" or the abandonment of an activity. That the duration of a child's interest will vary in connection with different activities has been shown in the studies reviewed in Table XXV and in other studies (37).

In spite of these variations, the findings in the three studies represented in Table XXV agree on some general points. First, it is apparent that the average activity span is relatively short throughout the age range included in the studies. Second, there is an increase in the averages from year to year. In all three of the studies cited, this increase is quite large in relative terms; but in terms of actual minutes of time, in no year do the averages show a marked and sudden rise. The tables do not reproduce the large individual differences among different children; nor do they reproduce the large variations that can be found in the behavior of the same child at different times. In the study by Gutteridge, for example,

it was found that a child might devote himself uninterruptedly to a given project for an hour or longer and then, on several other occasions, spend only a few minutes at a time on various projects. It has also been observed that the amount of persistence on the first occasion of dealing with a given project does not give an accurate prediction of the length of time the same project might appeal to a child when he meets it again. For example, it was noted by Wolf (87) that the median amount of time spent by

TABLE XXV

AVERAGE DURATION IN MINUTES OF SUSTAINED ATTENTION DURING CHILDREN'S FREE PLAY AS SHOWN IN STUDIES IN THREE DIFFERENT SITUATIONS¹

Age in Years	Average Duration of Sustained Attention		
	According to Van Alstyne ^a	According to Bott ^b	According to Gutteridge ^c
2.....	6.9	2.5	9.4
3.....	8.9	4.7	13.4
4.....	11.4	5.6	18.97
5.....	12.6	...	23.82

^a Van Alstyne, D.: *Play Behavior and Choice of Play Materials of Preschool Children* (Chicago: University of Chicago Press, 1932), 104 pp.

^b Bott, H.: *Observation of Play Activities in a Nursery School*, Genetic Psychology Monographs (1928), IV: 44-88.

^c Gutteridge, M. V.: *The Duration of Attention in Young Children*, Australian Council for Educational Research (Melbourne: Melbourne University Press, 1935), 52 pp.

kindergarten children in working with a peg board was 5.7 minutes on first presentation, but on the second presentation, the median was 7.1 minutes. A tinker toy, on the other hand, held the children for 22.5 minutes the first time, 15.5 minutes the second time, and 9.5 minutes the third time it was offered. The length of time the children persisted in a performance varied also under different conditions of motivation. On five tasks, the average duration was 7.2 minutes when no special incentive was offered; when the children were praised, the average rose to 10.9 minutes; and in a competitive situation, the average rose still further to 17.2 minutes.

This matter of persistence of endeavor obviously does not con-

¹ See accompanying text.

cern "mental" operations alone, and it might as properly be treated in connection with a discussion of personality or character as in connection with a discussion of mental processes. In any event, the ability to stay with a problem or project represents an important feature of effective use of one's mental abilities. As a child grows older, he acquires the ability increasingly to organize and control his behavior in terms of interests and purposes that he has acquired, as distinguished from the appeal of a passing, external event.

Duration of Attention at Later Levels. Although studies comparable to those reviewed in the table above are not available for older children and adults, we can gather from informal observation that, with advancing age, there tends to be an increase in the average duration of periods of sustained endeavor. To be sure, at any age level—regardless of the intensity of a person's labors—he will, if he is wise, relax from time to time to guard against fatigue, which may interfere with his efficiency. A significant mark of maturity is the ability to apply oneself to a job, with prudent and efficient periods of relaxation but without "frittering" time and energies by repeated excursions into woolgathering or other activities. In the case of most persons, both older children and adults, one finds that this ability to concentrate efficiently on the project in hand varies in different situations. A given six-year-old child may spend an hour or more on what appears to be highly concentrated activity in building towers, tunnels, and radio beacons in a sand pile. The same child may chance to wish to remove sand from his shoes and then, on discovering that his shoelace is knotted, may tire of the task of trying to untie the lace after only a few moments and resort to pulling the ends apart (which only tightens the knot), or asking for help, or giving up the job entirely, with his shoe still uncomfortably full of sand.

Similar observations may be made at later ages. It is not uncommon to find that children aged eight to fourteen will make rather elaborate plans for a project—such as the building of a little shed or making a small dam in a stream—and spend some time in getting materials and tools together, only to abandon the

project when it has barely gotten a good start. This tendency on the part of children to lose interest and to leave a project unfinished is often a cause of annoyance to parents and teachers. In many households, parents spend much of their time completing or badgering their children into completing half-done jobs, as when one shoe is neatly cleaned and polished, while the other still shows dull traces of mud; one ear is nicely washed, while the other is still dirty; most of the clothes are hung in the closet, but one stocking still lies on the floor, half hidden under the bed.

Many such occurrences may be put down as "natural" shortcomings that eventually will be outgrown. Frequently a child will persevere for a longer time if he is working in the company of another person. Sometimes a half-done job is evidence that the requirement placed upon the child is beyond his powers; sometimes an abandoned project has been a worth-while venture as far as it has gone. But frequently this tendency to do things by halves carries over into maturer years as a persisting infantile habit. Especially unhappy is the older individual who is so troubled by this habit that he has to spend more energy in getting "going" than actually in doing the work at hand (as when he privately groans and repeatedly reproaches himself during Christmas vacation for leaving undone work on a term paper which he really could quickly dispose of if only he would get down to business). Sometimes a parent will view with foreboding a child's tendency to fritter his time and to scatter his efforts. However, when such a child later faces a task that ties in with his own purposes and represents a real challenge, he may surprise both himself and his parents by the manner in which he hews to the line. Such a transformation is perhaps less likely to occur if the child has become accustomed at home and at school to meeting only projects that have been nicely sugar-coated to suit his own whim or caprice.

CHILDREN'S QUESTIONS

From early infancy, the child is pretty much of an explorer, and his curiosity takes many turns. Once he has learned to talk,

a prominent means of expressing curiosity is to ask questions. To be sure, children's questions are not always concerned with the business of getting information, for frequently their purpose is more to establish social contact or to receive attention than to gain knowledge. Children may even use persistent questioning as a form of resistance or as a means of expressing resentment.

In one of the language studies referred to in Chapter V (Fisher, 24), it was found that the proportion of questions in children's language during the nursery-school day rose with age from two per cent at eighteen to twenty-four months to fifteen per cent at three years. At the age range from thirty-six to fifty-four months, the proportion was about eleven per cent. A study of children's language at the kindergarten level showed that about a tenth of children's remarks were questions (70). A larger proportion of questioning would no doubt have been found had these children been studied exclusively in the company of older children and adults, rather than in the company of their peers. In several studies of the language of children in the home environment, at the age range from about four to eight years, it has been found that about a fifth of the remarks are questions (8, 9, 80).

The following illustrations of questions asked by preschool children (above average in intelligence) are from data collected by Rust¹ in a study of the growth of children's concepts. The first conversation, between a four-and-a-half-year-old girl and her mother, deals with the subject of death:

Child: Mummy, what means a dead mother?

Mother: A woman that has died and does not walk or talk any more.

Child: But what will the children do?

Mother: Well, if a mother should die, the father would take care of them and maybe an aunt.

Child: Will you be a dead mother some day?

Mother: Why yes, though I don't expect to be for a long time.

Child: A *very* long time?

Mother: Yes.

¹ Rust, M. M. The Growth of Children's Concepts of Time, Space, and Magnitude. (Unpublished) Teachers College, Columbia University. Reproduced by permission.

- Child:* But I don't want you to die; I want you here like this.
Mother: Well you will probably be quite grown-up before that happens.
Child: A long time?
Mother: Yes.
Child: But what *means* dead, mummy?
Mother: Well, your heart stops beating and you lie still without breathing.
Child: And what do you do with the talking part—you know, the inside talk?
Mother: I'm not sure, but some people think you live in another world and of course some don't.
Child: I guess we do (*excitedly*). Yes! And then you die in a *long, long* time—a *very* long time, and then I die and we both hug each other and then you won't have any wrinkles—Oh, look at that cute pussy! Isn't she darling? (*Ran off.*)

The following conversation began after the child had been told a story about a six-year-old girl:

- Child:* I'm four, aren't I?
Mother: Yes, four years.
Child: What's a year?
Mother: (*Explains.*)
Child: Is that a long time?
Mother: Quite a long time.
Child: How long?
Mother: It's hard to explain, but it is a lot of days, 365, and that's many.
Child: Well, but how long?
Mother: Well, well, you know when it was Christmas.
Child: Oh, yes, and I had a tree, and once I had the tree in the corner and once I had it on the table.
Mother: Well, that was twice, and it takes a year to have a Christmas. You see we have Christmas, then the time between that Christmas and the time between the next is a year.
Child: Well, that's a very long, long time. When I was very small we had a Christmas. Is a year a birthday?
Mother: Well, you have one birthday, then the time between is called a year, then you have the next birthday.
Child: Yes, three then four—then five—Say, how old are you?
Mother: Thirty.
Child: How did you stretch up?

This turn in the conversation appeared to suggest another line of questions to the child. She immediately continued:

Child: When I'm thirty will I be a mother?

Mother: If you have a baby you will.

Child: Do all womans have babies?

Mother: No.

Child: Why?

Mother: Some are not strong enough, some are too busy doing other things—some—

Child: Well in three or six weeks when I'm thirty, I shall have a baby—Where do babies come from?

Mother: Seeds.

Child: Where do the seeds come from?

Mother: The father and the mother.

Child: Where does the father keep his?

Mother: They're in his body.

Child: Oh, is he keeping them warm same as the mother does the baby?

Mother: He doesn't have them there to keep them warm, but because they belong there.

Child: Well, when I'm six weeks I'll marry you because you're so cute.

Mother: But— (*Father came in.*)

Child: Hello, Daddy. Did you buy me something? (*No further questioning.*)

The following questions and comments of a four-year-old child deal in part with concepts of time:

Child: Is this today?

Teacher: Yes, why?

Child: Well, is tomorrow tomorrow?

Teacher: Yes.

Child: Well, Sunday is my birthday.

Teacher: Do you know what date this is?

Child: Yes, it's March 5 and I will be four years old. That's this many (*counts down four buttons on his coat*).

Teacher: That is right, Frank.

Child: Some day I will be this old (*stretches out his arms at full length*).

The problem of time was the subject of the questions of another child, aged four and a half:

Child: What time is it?

Mother: 6:30.

- Child:* What means that?
Mother: What do you mean?
Child: What means 6:30?
Mother: Well, when it's evening it means time for you to think of bed and time for me to get dinner.
Child: How long is 6:30?
Mother: Just one minute, then it is 6:31.
Child: Is a minute big?
Mother: No, very short.
Child: Just a little bit like this? (*Demonstrates with finger and thumb and a tiny pinch.*)
Mother: I'll show you with my watch.
Child: (*Watches watch for a minute or two, then speaks.*) Do you like me mummy? (*Dismissed subject of time.*)

The same child, at another time, ended a series of questions concerning the days of the week with the query: "Where does time go?"

The questions of eight two- to four-year-old children during their free play in a nursery school were recorded in one series of observations and an effort was also made to precipitate questions by introducing novel pieces of equipment, telling new stories, and in other ways (14). Large individual differences were noted; one child asked questions at the rate of eight per ten-minute period, as compared with a rate of three and a half in the case of a child at the other extreme. The questions were about equally divided between questions that seemed designed primarily as a means of social interchange and questions that seemed definitely designed to elicit information, but children differed considerably in the relative frequency of the two types of questioning. The younger children questioned the teacher relatively oftener than did the older children, and the children whose adjustment to the group seemed to be most successful addressed other children relatively more than did children who were not so well adjusted socially. Coan noted, in passing, that the technique of turning a question back upon the child, as a means of getting him to think things out for himself, did not work well with some children; for the children would proceed to address the same question to others, and after having a

question thrown back at them by the adult, they tended to ask fewer questions.

The questions raised by children will vary with their changing abilities and interests. Thus, when a child is in the "naming stage" in his language development, he is likely to ask many "what" questions to learn what things are and to acquire names for them. Such questions usually precede "why" questions, dealing with causal relations in everyday happenings or with reasons for another's behavior.

Davis (17) gives an analysis of 3,650 questions asked by seventy-three children aged three to twelve years. The questions were recorded by parents and relatives at the time they were asked. Of these questions, 87.8 per cent seemed to arise from something in the immediate situation, as distinguished from questions about remembered or remote events (which constituted 10.8 per cent; 1.4 per cent could not be accounted for). A novel occurrence was more likely to provoke a long series of logically related questions, but frequently ordinary situations also provoked such a series of questions. Boys asked more questions involving causal explanation than did girls, while girls exceeded boys in questions regarding social relations.

Undoubtedly, children often are puzzled by things which they hesitate to ask about. Sometimes it would appear that they ask questions on one topic when, actually, they desire light on something else that puzzles them. One field that is difficult to probe is children's private questions with regard to their own private problems. It is interesting, in passing, to note that, in the total of 3,650 questions recorded by mothers of children aged three to twelve years in the study by Davis, there were only fourteen questions dealing with the topic of sex (including items such as the origin of babies, questions concerning the sex organs, and so forth). How many more there might have been if children and parents had been less inhibited would be difficult to tell, but it is likely that the number would have been larger.

It often is observed that a child will continue to repeat a question

after an adult has given him an answer. Such repetition may function as a technique for getting attention, but it may also mean that the child is still puzzled. Adults seem to differ considerably in their ability to put things into terms that the child can grasp. Sometimes an adult, in trying to fit his language to the child's level, uses baby talk and adapts the child's own names, terms, and mispronunciations, confusion of tenses and of the singular and plural, even though the child himself does not use mistaken forms by choice but through ignorance.

Instructive in this connection is a pleasant investigation by Smith (77), who studied the preferences shown by two- to four-year-old children for different ways of stating the same idea. For example, in hearing the story *Two Little Geese*, which tells about two geese that are looking for their rubbers, the younger children preferred "verbal repetition," thus: "Mr. Goose rolled up the rug and looked under it. He saw no red rubbers. Mrs. Goose rolled up the rug and looked under it. She saw no red rubbers." Less preferred was a single statement of what the geese did, thus: "Mr. and Mrs. Goose rolled up the rug and looked under it. They saw no red rubbers." Verbal repetition was also liked better than a form in which the idea was repeated, but in different words, thus: "Mr. Goose rolled up the rug and looked under it. He saw no red rubbers. Mrs. Goose's rubbers were not under the rug. She lifted it to look."

CHILDREN'S INFORMATION AND CONCEPTS

To measure the enlarging store of information and ideas that children acquire as they grow older would be an impossible task, but some indication of the "content of children's minds" can be gained from samplings of their knowledge.

An illustration of information that children acquire incidentally is provided in an informal study in a nursery school.¹ At the school, each child's chair at the dining-room table, his clothes rack,

¹ Unpublished study by Christine Heinig, Child Development Institute, Teachers College, Columbia University.

his towel in the bathroom, and his bed were marked with a tag bearing his name and a colored picture of an object or animal (thus, Henry's mark was a rabbit, John's a rose, and so forth). The children, all approximately three years old, had not been in the school many weeks before it was noticed that most of them knew not only their own identification but also the mark of each of the other twenty children. For a test of this knowledge, the chairs were disarranged, and one child at a time was asked to find the chair belonging to each of the other children, whose names were given in random order. Nearly all of the children found the correct chairs. Then, for the purpose of further study, the tags were removed and each child was given a new one. Each child was told of his new identification and was left to discover for himself that other children had new marks also; no directions beyond this were given. Within two weeks, over half of the group could identify correctly the symbols belonging to the other children. In the process of protecting their own property and of being shooed away from the property of others, the children had formed a large number of associations within a comparatively short time, even though neither they nor their teachers regarded the adaptation to the change as a formal learning assignment.

A study by Probst deals with the information possessed by children as they are about ready to enter the first grade at school. Probst's subjects included 100 children, aged five years four months to six years, carefully selected to represent a cross section of the population of the city in which the study was made. Items of the test, and the percentage of children who had correct information on each item, are shown in Table XXVI.¹

In the test recorded in Table XXVI, boys did somewhat better than the girls (the average boy knew ten more items than the average girl). Children from higher occupational groups also made a higher average than children from the lower occupational

¹ This study was conducted under the auspices of the Institute of Child Welfare at the University of Minnesota. Some of the questions, it will be noted, allude to items that are local to the city of Minneapolis.

TABLE XXVI

RESULTS OF INFORMATION TEST ADMINISTERED TO 100 CHILDREN,
AGED 5 YEARS AND 4 MONTHS TO 6 YEARS¹

(The values show the percentage of children who answered each question correctly.
Some of the items and questions have been abbreviated in the present table.)

<i>Test Items</i>	<i>Percentage of Children Who Answered Correctly</i>
Local Points of Interest:	
Tell me the name of a Minneapolis newspaper?.....	85
What is the name of a lake in Minneapolis?.....	27
What is the Mississippi?.....	78
What is Hennepin Avenue?.....	52
What is the Great Northern?.....	39
What is W.C.C.O.? (local radio station).....	56
What is Dayton's? (large department store).....	92
What large city is closest to Minneapolis?.....	29
What do they make in the Ford plant?.....	51
What do people go to look at in the Art Gallery?.....	5
In what city is Minnehaha Falls?.....	44
Tell me the name of a hotel in Minneapolis.....	16
Time and Number:	
How many pennies in a dime?.....	22
What time of year do flowers grow outdoors?.....	99
What time of year is the weather cold?.....	92
How many eggs in half a dozen?.....	12
What day comes after Sunday?.....	75
What time or what o'clock is it at noon?.....	30
How many pennies in a nickel?.....	37
How many hands has a clock?.....	94
What time of the year is the weather hot?.....	89
How many eggs in a dozen?.....	12
What day comes after Saturday?.....	86
What time or what o'clock is it at midnight?.....	22
Current Topics and History:	
Who is Andy Gump?.....	74
What did Lindbergh do?.....	87
Who was the first President?.....	55
Who is Dempsey?.....	63
Who is Jackie Coogan?.....	22
Who is Herbert Hoover?.....	0
Who is Skeezix?.....	81
What are the colors in the flag?.....	95
What people lived in America before the white men did?.....	22
Who is Joesting? (local football hero).....	8
Who is Coolidge?.....	38
Who is Al Smith?.....	1
Natural Phenomena:	
What shape is the sun?.....	85
Of what is snow made?.....	75
Where do you sometimes see a rainbow?.....	71
What makes it warm in the summer time?.....	91

¹ Adapted from Probst, C. A.: "A General Information Test for Kindergarten Children," *Child Development* (1931), 2: 81-95. Reproduced by permission. The original tables report separate scores for boys and girls and for different occupational groups.

TABLE XXVI (Continued)

<i>Test Items</i>	<i>Percentage of Children Who Answered Correctly</i>
Natural Phenomena (Continued):	
Where does the sun set in the evening?	12
What are clouds made of?	34
Where are the clouds?	99
Of what is ice made?	89
What makes it light in the daytime?	82
What shape are snowflakes?	8
Where does the sun rise in the morning?	33
What is lightning made of?	5
Literature and Music:	
What colors are the keys on a piano?	84
Whom was Red Riding Hood going to see?	58
What did Cinderella lose at the ball?	38
On what part of the violin do you play?	46
Who was Hiawatha?	7
How do you play a cornet?	24
What did Jack and Jill do?	94
With what do you play a drum?	94
When the three bears came home, whom did they find in bed?	85
What was the name of the boy who climbed the bean stalk?	44
What was Cinderella's coach or carriage made of?	11
How do you play a saxophone?	49
Animals, Birds, and Insects:	
How many legs has a horse?	100
What does a cat scratch with?	97
From what are little chickens hatched?	63
What do bees make that we eat?	59
A baby dog is called a puppy; what is a baby cow called?	26
What do we call a butterfly before it becomes a butterfly?	19
What do we drink that we get from a cow?	99
What color is a crow?	33
A bird flies in the air; what does a fish do in the water?	87
How many horns has a cow?	87
A baby cow is called a calf; what is a baby horse called?	12
How many wings has a butterfly?	9
Plants and Flowers:	
What do apples grow on?	97
What color are buttercups?	30
What color is wheat when it is ripe?	35
How many stones in a peach?	72
What do we call the part of the plant underground?	32
What do we eat that grows on vines?	29
What must we plant to have flowers?	95
What color are dandelions?	70
What do we call a flower before it opens?	36
What color is an apple before it is ripe?	66
What is the outside of a tree called?	26
What do we eat that grows under the ground?	59
Occupations and Industries:	
Who makes money by cutting hair?	96
To whose office do we go to get a tooth pulled?	95

TABLE XXVI (Continued)

Test Items	Percentage of Children Who Answered Correctly
Occupations and Industries (Continued):	
What does a plumber do?.....	60
What is butter made from?.....	40
What is a shoe made of?.....	79
Where does coal come from?.....	32
Who brings letters to the house?.....	98
Who takes people's tonsils out?.....	91
What do we call a man who raises corn and wheat?.....	57
What does a carpenter do?.....	60
Where does wood come from?.....	69
What is paper made from?.....	25
Household Arts:	
What do we use to cut cloth?.....	100
From what animal do we get bacon?.....	25
What is the outside of an egg called?.....	70
What is a vacuum cleaner used for?.....	94
From what does leather come?.....	17
From what do we get wool?.....	44
What do you use to cut meat?.....	100
What do you put with the lemon juice to make lemonade?.....	82
How do we get water out of clothes before hanging them up to dry?.....	90
For what is baking powder used?.....	84
What is the yellow part of an egg called?.....	30
From what do we get cotton?.....	11
Simple Mechanics:	
What do you use to put a screw into wood?.....	75
What do you see on the ground that trains run on?.....	98
What is the brake on an automobile for?.....	55
How are trees made into boards?.....	19
What is a thermometer for?.....	50
Gas or gasoline makes an automobile go; what makes a street car go?.....	12
What do you use to put a nail into wood?.....	98
What do you use a saw for?.....	100
What is sandpaper for?.....	45
How can you get to the top floor of a building without walking?.....	54
What makes a sailboat go?.....	45
What do we put in the radiators of automobiles?.....	53
Games and Amusements:	
How do you play leapfrog?.....	21
What do people fish with?.....	96
What must you not do in tin-tin?.....	1
On what do people play hockey in the winter time?.....	60
In what game do you have a king-row?.....	10
In what game do you have a touchdown?.....	28
What do we use to play croquet?.....	33
What are skis made of?.....	92
What must you have to play anty-over?.....	7
What do people play bridge with?.....	39
In what game do you use a racket?.....	26
In what game do you have a home run?.....	26

groups, although in many items the percentage of correct answers was the same for both groups.

The study was made during the heat of the Presidential campaign in the fall of 1928, but, as can be seen from the table, not a single child recognized the name of one of the major candidates and only one child recognized the name of the other. Probst reports that the political contest between Herbert Hoover and Alfred Smith apparently had no significance for these five-year-olds. Some of them were completely mystified when questioned regarding these names, and some of them associated the family name of Smith with that of a next-door neighbor.¹

The replies given by the children when they did not know the correct answer to an item frequently were quite interesting; one boy could not give the name of any newspaper, but he gave a vivid description of a recent sensational murder ending with the confident assertion: "That's the paper we take." "Clang" associations appeared in some answers such as: a carpenter fixes carpet sweepers or repairs cars; energine is put in the radiator of cars; the Great Northern is the North Star; butter is made from buttermilk or butterflies make it; plants, seeds, and flowers are manufactured in the Ford plant; a plumber plumbs, pulls out plums, or sells plumbers; beans grow in gardens, but bees make them. The effect of juvenile literature appeared in answers such as: "Clouds are made of animals"—the result of hearing a verse in which children see animals in the clouds and "Butter is made from tigers." The source of many incorrect answers was somewhat more obscure; one child asserted that a man who raises corn or wheat is called a bachelor.

The subject of children's information, opinions, and beliefs regarding objects, events, and topics that they see or hear about in their daily environment is still a fruitful field of study.² Not only

¹ The writer was reminded of this little item regarding the lack of concern about large, national affairs at this age level when, in a gathering of educators, he once heard someone seriously advocate that we should teach children about the protective tariff in the first grade!

² The information of older children has been investigated in an earlier study by Hall (30), and in one by Hall and Browne (31).

would it be instructive to test children on an additional large range of items, but it also would be fruitful to try to probe in more detail just what are the child's images and ideas in connection with a given topic and what are his sources of knowledge and misinformation.

A further brief sampling of children's information concerning certain topics is shown in Table XXVII. This table is based upon unpublished results obtained by the writer in a study of about 500 children, aged eight to twelve years, most of whom were pupils in public schools in New York City. The younger children were interviewed; the older ones wrote their answers on individual test blanks.

On many of the items in Table XXVII, the percentage of children who answered correctly would no doubt be considerably lower if guesses were eliminated. On some items, the percentage of correct answers is not much larger than could be expected by chance.

Among other things, it can be noted that relatively few children recognized the names of Senators of their own state (even though both of them were prominently in the newspapers at the time); that relatively few were well informed concerning points of the compass (some children were quite ready with the information that Columbus had sailed *west* when he discovered America and that Byrd went to the *South* Pole, but seemed to have no notion at all as to the meaning of directions when translated into terms of local geography). A large percentage of children believed that only one animal, the cow, has milk for its young, although some would also include the goat.

Certain comparisons, not reproduced in the table, show large differences between brighter and duller children. In one public school, the children in two bright classes were correct on sixty-seven per cent of the questions concerning the points of the compass, as compared with a score of only twenty-eight per cent in the case of older children in four dull classes; the bright children likewise did much better on questions concerning the names of the

TABLE XXVII

PERCENTAGE OF CHILDREN IN GREATER NEW YORK CHOOSING THE
CORRECT ALTERNATIVE ANSWER OR SUPPLYING THE CORRECT
ANSWER TO VARIOUS ITEMS OF AN INFORMATION TEST

(Abridged and adapted from an unpublished study by the writer.)

Test Item	Percentage of Children Giving Correct Answer				
	Aged 8	Aged 9	Aged 10	Aged 11	Aged 12 ^a
The sun rises in the: (a) east; (b) north; (c) west; (d) south.....	54	51	63	66	71
The moon sets in the: (a) east; (b) north; (c) west; (d) south.....	29	40	35	50	49
Up the Hudson River is: (a) east; (b) north; (c) west; (d) south.....	29	50	59	54	65
To the Rocky Mountains is: (a) east; (b) north; (c) west; (d) south.....	10	34	53	59	70
A boy walks a mile in about: (a) 1 hour; (b) 2 hours; (c) 25 minutes; (d) 5 minutes.....	27	44	58	52	47
A soldier can march in day about: (a) 5 miles; (b) 100 miles; (c) 200 miles; (d) 30 miles.....	42	53	60	64	52
A ton of coal would: (a) fill this class- room; (b) almost fill this classroom; (c) not nearly fill this classroom.....	22	36	55	54	61
Which is bigger, a corn plant or a wheat plant?.....	54	58	66	77	77
Which is bigger, a tiger or a cow?.....	67	72	73	78	79
Which is bigger a duck or a goose?.....	92	84	91	89	79
Which of the following is known as: (a) a President; (b) an actor; (c) prizefighter; (d) a Senator:					
Copeland?.....	8	10	25	29	40
Wagner?.....	8	18	25	32	37
Coolidge?.....	37	38	46	54	58
Hoover?.....	45	66	76	84	95
Roosevelt?.....	93	97	96	99	100
Jack Dempsey?.....	62	65	82	82	86
Joe Louis?.....	79	92	96	98	95
Clark Gable?.....	87	96	98	98	100
From what animal do we get:					
Caviar?.....	6	7	9	9	6
Venison?.....	14	18	19	31	—
Mutton?.....	6	12	30	45	39
Bacon?.....	41	51	67	63	65
Beef?.....	48	48	62	74	78
Pork?.....	32	65	84	92	91
Does a mother have milk for her baby? ^b					
Elephant?.....	18	16	23	18	20
Wolf?.....	19	19	28	32	20
Goat?.....	69	81	90	91	93

^a The twelve-year-olds were not as representative as the younger children, since they included no pupil above the sixth grade.

^b Introductory item: A mother cow has milk for her baby, but a mother hen does not. Does a mother have milk for her baby?

TABLE XXVII (*Continued*)

<i>Test Item</i>	<i>Percentage of Children Giving Correct Answer</i>				
	<i>Aged 8</i>	<i>Aged 9</i>	<i>Aged 10</i>	<i>Aged 11</i>	<i>Aged 12^a</i>
Do the following grow: (<i>a</i>) on vines; (<i>b</i>) in the ground; (<i>c</i>) on trees; (<i>d</i>) on bushes:					
Peanuts?.....	20	39	29	36	33
Watermelons?.....	10	17	45	48	45
Carrots?.....	65	80	73	91	93
Oranges?.....	87	86	95	91	91
Apples?.....	98	96	99	99	98
Potatoes?.....	78	90	92	95	98
Which of the following comes from: (<i>a</i>) an animal; (<i>b</i>) a mine; (<i>c</i>) a plant; (<i>d</i>) the air:					
Linen?.....	29	50	69	68	83
Salt?.....	30	44	74	82	85
Sugar?.....	44	58	75	82	80
Cotton?.....	42	75	87	90	92
Leather?.....	63	68	82	92	80
Coal?.....	64	82	94	96	92
Wool?.....	89	93	95	93	94
Meat?.....	92	100	91	99	100

young of various animals. The difference between the bright and dull children was not so large, however, in the case of questions which they could not so readily answer on the basis of everyday observation or experience (such as the question as to where peanuts grow, how far a man can walk in a day, and the like).

Frequently, in the course of this study, it was noted—as has been noted by other investigators—that a child's answer to a question may not at all represent what the child actually thinks. He may give an answer with tongue in cheek, or bluff, or give the first answer that comes to mind, even though it is inconsistent with earlier replies, rather than frankly say he doesn't know. An unwary investigator of children's thought processes might easily be misled, and after collecting a number of answers of this sort, reach conclusions concerning the naïveté of children's thinking as contrasted with the thought processes of adults. A child may appear to be quite uninformed and may seemingly be lacking both in logic and consistency when approached with adult problems, and

yet be quite realistic and hard-headed in dealing with matters of concern in his own world. In the present study, among other tongue-in-cheek guesses were the answers that bacon comes from a tiger (or from a zebra), because both are striped. A child may even go to some lengths in maintaining a position when it appears that he actually is in doubt. Thus, a ten-year-old boy answered that only cows have milk for their young; when asked how a puppy gets its food, he answered that, since a puppy must have milk, you have to have a cow. To the question: "What about a baby horse?" he again answered: "You have to have a cow"; and the same to: "What about a baby camel?" By this time, he seemed to feel that he had gotten into difficulties, so when asked: "What about a baby elephant?" he replied: "Oh, let him eat hay!"

It should be emphasized that a child may possess vast stores of information that are meaningful and useful to him in his everyday life, even though he may be lacking in information on many items of knowledge that adults take more or less for granted.

Children's Understanding of Academic Terms and Concepts. It usually is quite difficult for an adult to approach a topic from a child's point of view and to fathom how much or how little the child actually understands. Several factors contribute to this difficulty. For one thing, a child's grasp of a topic, term, or idea usually involves partial knowledge rather than complete knowledge or complete ignorance. Furthermore, the same child may be well informed along some lines and be quite lacking in understanding on other matters; and different children, even though they may be similar in intelligence and academic status, may vary considerably in the degree of their understanding of a specific subject. Also, children often are quite cagey about revealing their lack of understanding, and sometimes it is only by virtue of an inadvertent remark that a child betrays his ignorance.

A failure on the part of adults to appreciate a child's viewpoint or lack of understanding can often be observed in connection with the teaching of science and the social studies in the elementary

grades. In recent years, many schools have placed much emphasis on the social studies in the intermediate and early elementary grades, by way of emphasis on topics such as conservation, technological unemployment, monopoly, government control, problems of production and consumption, democratic as against other forms of government, and so forth. What often seems to happen is that these topics are treated in a manner that is just as unrealistic, from the point of view of the child's interest and understanding, as were some of the old-fashioned drills in history dates and in grammar. Thus, as noted in an earlier chapter, after a teacher has spent a good deal of time in discussing the abstract idea of monopoly as against coöperation, it may be found from informal conversations with the pupils that only a small proportion of them have any notion as to what "monopoly" and "coöperation" mean, and even those who are able to use the words may fail to see any relationship between the abstract and concrete meanings of these terms. As a result, the academic discussion may be quite divorced from actual experience.

In observing one such class discussion, the writer noted that the one child who seemed best able to handle the abstract idea of "monopoly" and who roundly deplored monopolistic practice was meanwhile exercising an effective little monopoly of his own by: (*a*) monopolizing most of the discussion; (*b*) "cornering" a book which he was supposed to share with two classmates seated at the same table, and (*c*) spreading his elbows wide, so that there was little space left for his classmates. This illustration is not cited as typical, to be sure, but analogous situations often arise. It is interesting to note, in passing, that the emphasis on the social studies sometimes seems primarily to consist in passing on to fledgling children social and economic problems of the adult world which adults themselves have difficulty in formulating, let alone solving. Such instruction should be more meaningful if the teacher could meet the children on their own ground and develop and illustrate concepts in terms of experiences with which

the children are familiar, before passing on to a discussion of the more general and abstract phases of the subject.

What often happens is that children are called upon to use a number of terms and ideas in larger relationships when they have little understanding of the underlying meanings of the individual terms and ideas. An illustration of this from a study by Scott and Myers (74) is presented in Chapter V. Many children for example, were able to name two explorers or to give the names of colonies but then were unable to give a clear statement as to what *is* an explorer or a colony. To be sure, a child's difficulty with such questions may not be due so much to a lack of recognition of the meaning, as to an inability to find the right words to express the meaning; but this hiatus is interesting none the less. It should be recognized, of course, that some vagueness on the child's part as he studies a given subject is unavoidable,¹ for it is only by using terms and concepts in various contexts and relationships that they come to be defined and to have more and more meaning. Although this is recognized, it still may be said that, where there is a choice, it would be better to approach a topic by way of conditions known to the child in his own experience, rather than by way of abstract and remote terms or propositions.²

Instructive findings concerning children's knowledge of terms and concepts used in the social studies have been presented by Kelley and Krey (47). Among other things, these investigators found an increase from grade to grade in the percentage of children who were able to recognize the meanings of the various terms that were included in the tests. There was little evidence that any particular subject is inherently more difficult than others, with the possible exception of the analytical social sciences. Children's

¹ For a review of studies of children's understanding of terms and concepts involved in school subjects, including investigations by Lacey (48) and Mathews (57), see Jensen (43).

² For example, a child may fail for a long time to see any relationship between the taxes he reads about in his study of history and the extra penny he pays as a sales tax in making a small purchase.

advance in knowledge of social affairs was found to take place by a process of accumulation and integration, varying greatly according to the individual. One pupil may be operating on a considerably higher or lower level of understanding than his classmates. It has also been observed in many studies that a child may be highly competent in dealing with one topic or subject and be quite vague on other topics that are not inherently more difficult. Again a child may be able to comprehend a given term in one context and not in another.

An increase in children's understanding of words used to express social concepts is shown in a study by Meltzer (58). Over 300 elementary- and high-school pupils were interviewed to find the meanings associated by children with such terms as democracy, socialism, radicalism, militarism, patriotism, monopoly, anarchism, and personal rights. The answers were written down by the investigator and subsequently grouped into various categories and scored. The replies were rated on a scale from 8 (denoting a superior answer, showing a high degree of understanding) to 0 (denoting misconceptions and "don't knows"). The maximum score a child could obtain on the thirty-one items was 248. The average scores of the various grades are shown in Table XXVIII.

Children's knowledge of the terms used in the interview bore a

TABLE XXVIII

AVERAGE SCORES IN INTERVIEW TESTS BY MELTZER OF CHILDREN'S UNDERSTANDING OF 31 POLITICAL, ECONOMIC, AND SOCIAL CONCEPTS¹

(The maximum score was 248^a)

	<i>School Grades</i>					
	<i>V</i>	<i>VI</i>	<i>VII</i>	<i>VIII</i>	<i>IX</i>	<i>X</i>
Number of cases . .	50	50	54	33	50	39
Average	27.40	45.59	67.60	78.60	86.00	95.00

^a Revised in keeping with the author's discussion to include only unselected children. The average for the fourth grade, including only two children, was 20.

¹ Adapted from Meltzer, H.: *Children's Social Concepts: A Study of Their Nature and Development* (New York: Teachers College, Columbia University, 1925), 91 pp. Reproduced by permission.

high correlation with their educational age and a somewhat lower correlation with their mental age. The understanding of the terms used in parlance on social affairs according to this study cannot be gauged simply by testing the child's general vocabulary, for there was a relatively low, although positive, correlation (.31) between the children's understanding of these terms and the total number of words they used in efforts to tell what the words meant to them.

Difficulty in understanding economic and political concepts is not, of course, limited to children of elementary-school age. At the high-school and the freshman and sophomore college levels, many students have difficulty in dealing with a number of economic concepts (54). Indeed, Thorndike has found a high degree of ignorance and gullibility among adults who are much above average in both education and intelligence (79).¹

Examples of Children's Misconceptions. Practically all adults can recall from childhood many erroneous impressions, false beliefs, and misinterpretations of words and phrases. Such misconceptions throw some light upon the difficulties which children have in formulating their ideas and in grasping the meaning of what they hear and see. It would be more revealing if somehow it were possible to obtain cumulative reports from children themselves, for an adult will have forgotten many temporary misconceptions that he entertained as a child and he is especially likely to forget the ways in which his ideas constantly were being revised, supplemented, and clarified. (It may be added that misconceptions are not, of course, limited to children.)

Among children's misconceptions, there are many that take the form of mistaken beliefs, frequently arising quite by chance or through the solemn testimony of a playmate. Unless a child, through somewhat bitter experience, has learned to distrust others, he is prone to accept as true anything that is told to him and that is not contradicted by his own experience or by some higher au-

¹ The topic of various degrees of understanding associated with words is considered in connection with the discussion of language in Chapter V.

thority. In the case of matters that are of interest or that concern him in practical ways, such beliefs may have a definite influence on his actions. Following are illustrative instances in the case of one child: He confidently accepted the superstition that a swallowed hair turns into a worm once it gets into the stomach; that a swallowed apple seed would sprout in the stomach; that a withered spot on the lawn or in a pasture meant that the ground was hollow underneath and that, if one landed on such a spot hard enough, he might sink all the way to China; that the devil came when people whistled. A child's ideas concerning sex are especially likely to involve many mistaken notions if the child gets his information only from the back alley or if his elders deliberately try to frighten him with falsehoods. Numerous misconceptions may likewise arise through deliberate or half-joking remarks which adults make concerning individuals against whom the adults are prejudiced. Such falsehoods are often elaborated by children and passed on to others. Thus a boy of nine believed that members of a certain small Protestant sect could spit blood whenever they wanted to and that one would catch a bad disease if one went to a toilet that had been used by members of another sect.

It should be recognized, of course, that adults also are quite gullible, especially in matters that concern their own desires. Also, many childish misconceptions persevere into adult years; and even when erroneous ideas that were entertained during childhood have undergone correction, there still may be residual effects of the earlier images and beliefs. One of the arts of the demagogue is to touch off such childish images and attitudes.

Many of the more obvious misconceptions simply concern misinterpretation or lack of understanding of words and phrases. Thus a child was overheard to give this version of the oath of allegiance to the flag: "I pledge a legion to the flag and to the Republic of Richard Sands; one nation and a vegetable with liberty and justice to all." Another sang: "Long train run over us (Long to reign over us)"; and another patriotically intoned: "I love thy rots and chills (rocks and rills)." After a moment's hesitation on

a line in *The Night Before Christmas*, a child came forth with: "I rushed to the window and vomited (threw up!) the sash." Faulty perception of a word may lead to confusion, as in the case of the child who defined a pioneer as "one who moves father (farther) west." Even a written symbol may be puzzling because of its associations, as in the case of the child who answered during class recitation that the abbreviation of Illinois is "Sick," and another who reported that "Copra is a dried snake." In a study referred to above, a child decorously tried to avoid the use of what he regarded as a slang term and reported that a baby goat is called a "child"; when questioned further, he said he knew some people called it a "kid." Sometimes a child may appear to entertain a misconception when actually his trouble is lack of ability to pronounce correctly or to spell, as in the case of a youngster who reported that John Paul Jones was called the Father of the Navel and that George Washington was born in the State of Vagina and when his brother died he left him Mount Vermin.

Interpretation of Poems. As already noted, a good deal of children's lack of understanding consists not so much of definite misconceptions as of failure to "get the point" which adults take more or less for granted. This can be observed frequently in connection with children's poems and songs. For example, a child may "learn by heart" and quite enjoy the poem that begins: "I have a little shadow that goes in and out with me," but may see no connection at all between the poet's shadow and his own. An illustration of this failure on the part of many children to get the point is provided by Pyle (67), who measured, among other things, children's understanding of a little poem called *Anna's Banana*,¹ which follows:

"I ate a banana," said Anna,
"I began at the top, and ate down!
I ate in my very best manner,
Not a bit of it fell on my gown."

¹ Taken from *Short Poems For Short People* by Alicia Aspinwall, published and copyrighted by E. P. Dutton and Company, Inc., New York.

"But its skin, I'd forgotten, entirely,
And it fell on the ground at my feet,
Then when I got up, I sat down,
Right down, on the dusty old street!"

With the reading of this poem, the children were presented with the question: "What made Anna sit down?" and with five statements from which to choose what they deemed to be the correct answer. These follow:

- (1) The banana made her sick.
- (2) She wanted to pick up the banana skin.
- (3) She slipped on the banana skin.
- (4) She forgot to throw it in the garbage can.
- (5) She wanted to eat the banana.

At the third-grade level, only thirty-two per cent of the children got the idea that Anna had slipped on the banana skin. The percentage rose to sixty-three and a half at the fourth grade, seventy-one at the fifth grade, and eighty-three at the sixth. Pyle's interesting study also gives results for other poems, as well as problems involving arithmetical reasoning.

Concepts of Time, Space, and Magnitude. To probe a child's understanding of units and periods of time is somewhat difficult, but it appears that ideas concerning the larger units of time are relatively slow in developing. Through concrete experience in the day's routine,¹ a child has an opportunity gradually to form a notion as to what is meant by a minute or a day, although much confusion often prevails, partly by reason of vagueness in adult usage (such as the indefinite: "Just a minute"). As is the case with adults, a child's experience of the passage of time will be influenced by what happens to fill the time; time spent in waiting is long, and a twenty-minute spelling lesson may seem almost interminable, while a similar recess period spent in play may seem short.

Studies of children's time concepts indicate that children are primarily interested in the present and that their ideas as to his-

¹ An incidental effect of radio programs, it seems, is to accelerate children's learning to tell time by the clock in order that they may follow the radio schedule.

torical time, in terms of decades, centuries, or epochs, are likely to be quite hazy until they are well along in school,¹ and children well along in high school have difficulty in grasping duration and sequence in connection with historical events and movements. (26). In a study by Oakden and Sturt, (63), children's ideas of degrees of antiquity were measured by such means as having them arrange the names of well-known historical personages in order of their remoteness in the past and having them respond to pictures denoting customs and costumes relating to different historical periods. They found that concepts of historical time were rather hazy until about the age of eleven years. Rebello, (68), in a study of Polish children, found that children aged seven to nine years had no clear conception of the historical past, of the length of a year, or of the length of human life. Time evaluations were found to be made in terms of association with concrete experiences.² Also difficult for children is the concept of time in relation to space (see, for example, the large number of children who had no approximate notion of how long it would take a boy of ten years or more to walk a mile or how far a man could walk in a day, Table XXVII).

The foregoing statements no doubt must be accepted with some reservation, for some children will acquire ideas of time considerably earlier than others; likewise, a given child may have a good grasp on some time relations and not upon others. It is also possible that the development of time concepts could be expedited by more emphasis upon such concepts in the teaching of children, if that were deemed to be desirable.

Undoubtedly, much that a child is exposed to in history lessons, or in units on Ancient Egypt, or on the Early American Indian (not to mention units in geology dealing with the age of the

¹For studies of children's time concepts, see Harrison (33), Bandura (3), Oakden and Sturt (63), Rebello (68), and Schaeffer (73).

²Note that children for many years are quite content with "once upon a time" or "once, a long time ago" in the stories they hear. Everyday examples of a child's lack of orientation in time can frequently be found. Thus a seven-year-old, after hearing from her mother the story of Noah's Ark, asked: "Did you get very wet, Mummy?"

earth!¹) is lost upon him as far as time relations are concerned.²

Children's Understanding as Revealed by Their Wishes. An indirect approach to children's thought processes can be made by asking the child to express his wishes. His reply will reveal, to some degree at least, his ability to deal with general concepts. In a study of this kind (Jersild, Markey, and Jersild), almost 400 children were asked in private interviews the following question: "If you had a wish and your wish would come true, if you could wish for anything you wanted and have it, what would you wish?" An abridged summary of the results is given in Table XXIX.

Other questions designed to test the child's way of thinking and his degree of understanding were asked in other parts of the interview. The child was asked, for example: "If you could be changed and be different from what you are, if you could be changed in any way you wanted, how would you want to be changed?" The child was also asked questions concerning what he would do if he had a million dollars, whether he would rather be a boy or a girl, whether he preferred to go to school or to stay home, and the like.

The figures in Table XXIX show that, in the replies of all children combined, the largest group of wishes dealt with specified material objects and possessions. Other fairly large groups of wishes dealt with diversions, having a baby or a sibling, benefiting relatives and others. The older the child, the more likely he is to express his wish in general and inclusive terms, rather than in terms of limited concrete objects. Similarly, the more intelligent child of any age is likely to deal with more comprehensive categories. The young and the unintelligent child does not

¹In a fifth-grade class observed by Professor Gerald Craig, the children were discussing the Appalachian Mountains, and the teacher took this opportunity to question them on what they had retained from previous discussions of the age of the earth. The question: "How old do you think those mountains are?" stumped the group, until a hardy youngster answered: "I think those mountains came there at about the same time as the Pilgrim Fathers."

²For illustrative studies of children's understanding of geographic terms and relationships, see, for example, Eskridge (23), and Anderson (2).

TABLE XXIX

DISTRIBUTION IN PERCENTAGES OF CHILDREN'S FIRST WISHES
UNDER GENERAL HEADINGS¹

Type of Wish	All Sub- jects	Age Groups				I.Q. Groups		
		5-6	7-8	9-10	11-12	120 and Above	100-119	80-99
I. Specific material ob- jects and possessions	35.8	55	48	26	14	23.3	38.3	47.9
II. Money	8.5	5	13	10	6	9.3	9.7	5.2
III. Good living quarters . .	2.0	1	0	2	5	1.6	1.1	4.2
IV. Activities, sports, di- versions	7.3	6	3	12	8	11.6	5.1	5.2
V. Opportunities and ac- complishments	3.5	4	2	1	7	3.9	3.4	3.1
VI. To be independent, have a vocation	2.5	0	4	0	6	0.0	3.4	4.2
VII. To be bright, smart . . .	0.8	0	0	2	1	1.6	0.0	1.0
VIII. Moral self-improve- ment	0.8	0	1	2	0	1.6	0.6	0.0
IX. Improved personal ap- pearance	0.0	0	0	0	0	0.0	0.0	0.0
X. Prestige, adventure . . .	1.0	1	2	1	0	1.6	0.6	1.0
XI. Supernatural power . . .	2.0	4	2	2	0	3.9	1.1	1.0
XII. To have a baby, sibling.	5.8	6	6	7	4	3.9	7.4	5.2
XIII. To be married, have a lover	1.0	1	0	1	2	0.8	0.6	2.1
XIV. Parents never die; re- tain parents, etc.	2.8	1	2	1	7	2.3	2.9	3.1
XV. Companionship, friend- ship, social contacts . . .	1.8	1	0	2	4	3.9	0.6	1.0
XVI. Relief from irritation and discomfort	1.3	2	2	0	1	1.6	1.1	1.0
XVII. Specific benefits for pa- rents and relatives . . .	5.0	3	1	9	7	3.9	5.7	5.2
XVIII. General, inclusive ben- efits for self: health, happiness, etc.	4.8	3	4	6	6	9.3	3.4	1.0
XIX. General, inclusive im- munities for self: never to be sick, etc. . .	0.8	0	2	1	0	0.8	1.1	0.0
XX. General benefits for rel- atives	3.0	0	2	2	8	2.3	2.3	5.2
XXI. General benefits for others; philanthropy . .	9.3	5	6	13	13	13.2	10.3	2.1
XXII. No response; "don't know"; unintelli- gible response	0.8	2	0	0	1	0.0	1.2	1.0
Number of children questioned . .	400	100	100	100	100	129	175	96
Number of items reported	400	100	100	100	100	129	175	96

¹ Adapted from Jersild, A. T., Markey, F. V., and Jersild, C. L.: *Children's Fears, Dreams, Wishes, Daydreams, Likes, Dislikes, Pleasant and Unpleasant Memories*. Child Development Monographs (New York: Teachers College, Columbia University, 1933), No. 12, 172 pp. Reproduced by permission. This table omits comparisons between boys and girls and between school groups that are included in the original table.

realize, apparently, when he wishes for three toys and uses a separate wish for each one that he might have gained these and more by a single, more inclusive wish.

The children's replies indicated an increased recognition with age that, if general desires are granted, many specific requests will automatically be taken care of. One feature stood out clearly in a detailed analysis of the children's replies, however: as revealed by their wishes, children's thoughts are directed mainly toward accomplished objective facts, rather than toward the possession of powers within themselves which would enable them to win the things they desire. The child will wish for a good grade in school rather than for the ability within himself to get good marks. Few children wished for higher mental ability, and among those who did, the wish was expressed as frequently by children who already had superior intelligence as by children who were below average. Wishes dealing with improvement in personal ability, strength, size, or appearance constituted only about eleven per cent of the children's wishes (even with the liberal inclusion of wishes for specific accomplishments, such as the ability to ride horseback or to play the piano).

Similar trends appeared in children's altruistic wishes. Many children, for example, asked for new hospitals, improved tenements, money to endow charities, pacifistic ventures, and the like, rather than for changes in conditions that underlie poverty and strife.

In describing how they would like to be changed if given an opportunity, children likewise had their eyes fixed upon the external environment rather than upon the factors which determine their power to cope with this environment. Only about a third of the children in the study saw in this question an opportunity to wish for an improvement in their personal qualifications by asking for greater intelligence, strength, and ability. Even though, in answer to other questions in the interview, they spoke freely of desires they wished might be gratified and of irritations and fears that troubled them, it did not seem to occur to them that, through

a change in their habits or ability, they might win for themselves both the prizes and the immunities that they desired.

To be sure, adults often reveal the same lack of analysis; they also tend to speak more in terms of vague generalities than in terms of underlying factors—in terms of ends rather than means, symptoms rather than causes—even though they may wield a larger vocabulary and deal with more inclusive concepts.¹

Limitations in our Knowledge of Children's Concepts. Nearly all studies reveal a gradual increase with age of children's information concerning specific facts and their understanding of general terms and concepts. As indicated above, the studies also show that children will vary considerably in their grasp of terms and ideas which they meet in everyday life and in school. No conclusive statement can be made, however, concerning the level of mental maturity, if such could be found, when children are likely to be "ready" for this or that line of study. The available results do not indicate the extent to which misconceptions and lack of information on this or that topic are due to lack of ability to grasp the underlying idea, as distinguished from lack of proper instruction and opportunity to learn. It is apparent, however, that many of the concepts that children meet in the course of their studies are not effectively grasped, that adults often take for granted a degree of understanding that does not exist, and that, from an educational point of view, we need more systematic information as to when various topics might best be promoted and how to present what is to be taught in the most meaningful context and sequence.

CHILDREN'S REASONING AS COMPARED WITH ADULT REASONING

Apart from the problem as to what children know or don't know, as compared with adults, the question might be raised as to the nature of their thinking, their manner of reasoning, as

¹ For various comparisons between the wishes of children, college students, and elderly people, see Wilson (85, 86).

compared with adults. According to one theory, there is an essential difference in kind and quality between the thinking of young children and the thinking of older persons. One investigator (64) for example, has described different *stages* in children's thinking and has maintained that, up to about the age of seven or eight years, a child tends to reason only in terms of isolated or particular cases, is incapable of a genuine argument, feels no need for verification or logical justification, has difficulty in making generalizations or deductions and in reasoning from the point of view of another person or from the point of view of a general proposition.¹ It has also been maintained that it is not until about the age of eleven or twelve years that a child is able sufficiently to adopt another's point of view to reason correctly from another's beliefs or to carry on formal thought or arrive at pure deductions, and likewise, that it is not until about this age that the ability to give a logical explanation of causal relationships has completely evolved (65). The findings in many studies, however, go counter to the view that there are distinct stages in the development of children's reasoning; although, as one would expect, as a child increases in knowledge and experience, there is an increase in his ability to solve problems in greater number, variety, and complexity, in his ability to formulate answers and to give "reasons," and in his ability to reorganize experience and to arrive at generalizations.

It is true that children's explanations and solutions often are naïve, inconsistent and self-contradictory, but when adults are called upon to deal with wholly unfamiliar material, they tend to make mistakes similar to those made by children (1, 35). Moreover, various "stages" or "types" of thinking may be found in children at any age level, depending upon the complexity of the problem and the child's degree of unfamiliarity with it (18).

¹ See also the discussion on pages 125 to 127 in the earlier chapter on language, McCarthy's account of findings in studies of egocentricity in children (53), and Curti's account of concept formation (16).

Explanations of Physical Happenings. In a study by Deutsche (19), experiments were performed, such as covering a jar in which was a lighted candle and then asking the child to explain why the light went out, placing pebbles in a beaker of water and asking why the water rises, and others. Answers offered by a small group of kindergarten children and a large number of children in grades three to eight were classified and analyzed. When the answers were rated and quantified, there was an increase in the children's scores from year to year. There was no evidence that children readily give an animistic or mysterious explanation of natural phenomena, and no evidence was found for the view that there are distinct stages in children's reasoning or in their explanations of cause and effect. The various types of answers were found over a wide range, and at no age did the children's answers fall into any single type. It was found that causal thinking develops, not by stages, but by a gradual process. Moreover, the answers given by individual children did not fall into a single class; a child might handle quite effectively a problem that touched upon matters on which he was informed and then give a naïve answer to another problem. Children's ability to solve the problems was more closely related to their school experience than to chronological or mental age.¹

Tests of Reasoning. Another approach has been to examine their ability in handling problems that call for inductive and deductive reasoning. In one such study with British children, Burt (11) found differences between older and younger children in ability to handle problems of varying degrees of difficulty and complexity but no evidence that the reasoning processes of younger children differ in kind from the logical processes of older children. Children at the beginning of their school career could handle arguments that proceed by eliminating in succession each of a number of alternative hypotheses except the correct one.

¹ For another study of children's grasp of cause-effect relations, see Lacey and Dallanbach (49).

At seven years, for example, the children could solve this problem:

Tom runs faster than Jim; Jack runs slower than Jim: who is the slowest, Jim or Jack or Tom?

Seven-year-olds also found the correct answer to the following puzzle:

It is Sunday, and on a Sunday afternoon Ada usually takes the baby out, or goes by herself to the pictures, or walks over to see her aunt, or else goes by train to the cemetery. Today she has no money with her and the baby is asleep upstairs. Where do you think she has probably gone?

At eight years, the children solved a problem such as this, which likewise called for elimination of untenable hypotheses:

I don't like sea voyages, and I don't like the seaside. I must spend Easter either in France, or among the Scottish Hills, or on the South Coast. Which shall it be?

It was not until a later age, near the end of the elementary-school period, however, that the children were able to solve a problem calling for the discovery of a general rule from a number of particular instances, such as:

One pound of meat should roast for half an hour; two pounds three quarters of an hour; three pounds, one hour; eight pounds two and a quarter hours; nine pounds two and a half hours. From this, can you discover a simple rule by which you can tell from the weight of a joint how long it should roast?

Children at a given age level are likely, of course, to differ in their ability to solve problems such as the foregoing. Another method of studying reasoning is to test the child's ability to detect logical absurdities and to draw correct generalizations. In a study by Moore (61), two hundred children, ranging in age from five to twelve years, were tested. Several reasoning tests, such as the following, were used: "If all fish in the world have gills, can I be sure that fish in Alaska have gills? Why?" Some of the youngest children were able to give a satisfactory answer to such a question as this, which called for a specific conclusion based

upon a general proposition. Another set of statements consisted of "autistic" fallacies, such as the following: "If one washes, he cleanses himself from dirt; if one sins, he is dirty: if one washes, he cleanses himself of sin. Why?" Children below seven-and-a-half years seemingly were unable to understand and to refute this type of proposition. A third test included logical fallacies such as the following: "All automobiles have four wheels. This vehicle has four wheels; therefore it is an automobile. Why?" Some children between five and a half and six and a half were able to analyze a fallacy of this kind and to tell why the conclusion was false. On the various tests, there was a fairly steady increase in score with age.

As already noted the adult, when confronted with a puzzle, usually has a larger fund of past experience from which to draw than has the child and, as a result, is likely to be somewhat deliberate—to turn the matter over in his mind, so to speak. The child, with less past learning at his command, is more likely to forge ahead in overt trial and error. This difference was noted in a study by Heidbreder (reviewed below). The older the person, the more his behavior in dealing with a problem is likely to show a definite pattern; his time curve is likely to be more regular, and his procedure more uniform.

An interesting method of comparing animals, children, and adults in the same problem situation has been described by Hamilton (32). A multiple-choice arrangement was used. In order to obtain food, the subject had to escape from a small compartment through one of four doors. Only one of the four doors was unlocked, and since the same door was not unlocked twice in succession, the subject could narrow his choice, in subsequent trials, to the three doors which were not unlocked in the foregoing trial. Differences among the reactions of adults, children and animals were observed. The adult, after some preliminary trials, learned to omit the door which had opened in the previous trial and to attack the remaining three according to some plan. Children, on the other hand, would more often try all four doors, one

at a time and in irregular order, or return to the same door a second time, even though it had not yielded.

A study by Hicks and Carr (39) gives comparisons between the performance of adults, children, and rats in learning a maze. The subjects included twenty-three rats, five children between the ages of eight and thirteen, and four adult graduate students. The human maze was larger than that used for the rats but was roughly similar, the human subjects were blindfolded, and each error, consisting either of entering a blind alley or of turning back on the course, was recorded. In the first trial, the respective average number of errors of the rats, children, and adults were 53, 35, 10. The adults reduced their errors to an average of one in the ninth trial, the children theirs to one in the eleventh, and the rats theirs to one in the seventeenth. The children and the animals plunged ahead more heedlessly and covered more ground than did the adults.

Similar but not so marked differences between children and adults were found in a study by Gould and Perrin (28) of their performances on a stylus maze. The adults tended to be more deliberate, and less ready to strike ahead in a hit-or-miss fashion. But the difference is one of degree rather than of kind.

In all of these situations, it can be seen that the adult is more able to inhibit unprofitable movements, to try to carry over to the new task the methods he has found helpful in his past experience. During his mental, as opposed to his overt trial and error, he may be saving himself much time. Yet, in an entirely novel situation or in a situation that is completely baffling, we often see adults fumbling blindly; the adult, like the child, finding that nothing he has learned from the past gives him a clue, would have to try and err, attempt now one method, now another—to do his thinking with his hands and feet, so to speak. Some of his past experience might still stand the adult in good stead; he would be less likely to repeat methods that had previously failed and, by reason of his maturity, would be able to see the “point” some-

what more quickly and to operate with a larger number of elements at one time.

As suggested above, even though there may be no essential difference between the nature of the reasoning process in younger and older persons, it obviously would be possible to find any number of problems that an older person normally can handle more effectively.¹ A child may even fail to see a problem that strikes his elders. This was noted in a study by Heidbreder (36), in which adults and children of various ages were confronted with three situations in which the problem was to discover which of two boxes contained a doll. In one situation, both boxes had a cover design of plain geometrical figures and the doll was always in the right-hand box. In the second situation, a plain and a flowered box were placed side by side and the doll was always in the flowered one, regardless of its position. In the third situation, the subject was presented with two plain boxes or two boxes covered by dotted figures; if the plain boxes were used, the doll was in the more remote box, but if the dotted boxes were used, the doll was in the nearer one. Table XXX shows the number of trials and solutions by individuals at various age levels. As it proved, even though the children below four were given many more opportunities than were given to most of the other groups, few of them succeeded in learning the solution of these problems. Adults learned most rapidly of all, and children between six and ten were far superior to children between four and five. In these situations, the adults quickly approached the problem as a problem, while the children paid more attention to the materials as such.

The Effect of Practice on Speed of Association. An interesting illustration of the effect of practice on the speed of association is given in a study by Lund (52). Among the materials used was a color-naming test. To measure the speed of word naming, as

¹ A study by Maier (55), for example, shows that children below six may have difficulty in combining the essentials of two isolated experiences in such a manner as to reach a goal.

distinguished from color naming, sheets were prepared containing the names of the colors in the same order as the corresponding colored squares.

Adults were a good deal speedier in reading the words than in naming the corresponding colors. The respective averages were

TABLE XXX
NUMBER OF SOLUTIONS AND NUMBER OF REACTIONS TO THREE
PROBLEMS BY CHILDREN AND ADULTS¹

Age of Subjects	Number of Subjects	Problem I		Problem II		Problem III	
		Number of Solu- tions	Number of Reac- tions	Number of Solu- tions	Number of Reac- tions	Number of Solu- tions	Number of Reac- tions
3 years.	10	1	219	2	230	0	216
4 years.	10	6	178	10	23	1	348
6 to 10 years.	10	10	174	10	23	10	81
Adults.	10	10	34	10	16	10	40

36.4 and 56 seconds. This might be taken to mean that it is more difficult to name colors than to name words, but the performance of a five-year-old child who was included in the study suggests a different interpretation. At the beginning, even after some preliminary practice, the child could name the colors faster than she could name the words; she had more experience in naming colors than in reading. But after further practice, her speed in both performances became more and more the same; at the seventieth trial, the lines of the two practice curves touched. Undoubtedly, if tested in later years, after she had continued to practice reading more and more, her word-naming speed would have been faster than her color-naming speed, just as that of other adults.

THE TRAINING OF CHILDREN'S REASONING ABILITIES

It is a good deal easier to coin the slogan that we should "teach children to think" than to put that slogan into practice. To list all the factors that go to influence "good thinking" would require

¹ Adapted from Heidebreder, E. F.: "Problem Solving in Children and Adults," *Journal of Genetic Psychology*, (1928), 35, p. 525. Reproduced by permission.

more space than this book allows and more ingenuity than this writer could supply. There are some more or less homespun considerations that can be mentioned, however. For one thing, in order to think, one usually needs something to think about. There must be a problem that calls for solution, and unless the enterprise is to be one of rote learning or a jaunty form of word play, it must be a problem that somehow ties in with a personal concern.

The Value of Knowledge. Other things being equal, the better informed a child is, the wider the range and exactness of his pertinent knowledge and experience, the better his thinking will be. This simple rule is sometimes overlooked when a program to promote "good thinking" is under way. Knowledge of pertinent facts not only is helpful in supplying the data for proper inferences and conclusions but is equally important as an antidote against gullibility and the fallacy of finding an agreeable example to prove a point.

This matter of knowledge of pertinent facts frequently does not always depend so much upon erudite academic knowledge as upon information of the sort that goes to make up what is called ordinary "horse sense." As an example, consider the following, which is summarized from records in a study by the writer: A fifth-grade class was considering the relative merits and cost of milk supplied by two different concerns. To cap the discussion, which was already loaded against one of the two brands, a laboratory test was made of the butter-fat content of the two. In testing one brand, milk was poured from a full bottle; in testing the other brand, the bottle that was used was one from which an inch of top milk had already been removed. The test, of course, favored the bottle with a good layer of top milk. In this situation, both pupils and the teacher either chose to ignore or were ignorant of a factor that any properly domesticated person would take into account.

Adult Influences. Helpful also is the example set by a child's instructors, the premium they place upon a well-considered

answer, the encouragement they give to put the child on guard against hasty generalization, contradictory or inconsistent evidence, and admixtures of prejudice and desire. In many practical details of everyday life, it is more important, to be sure, to know the right answer than to be able to give the reasons underlying the answer; but in many situations, both in and out of school, there is opportunity to give the child credit for the reasons he can bring to bear to support a stand, rather than simply to credit him when he answers according to the book. A child who ventures to think for himself on a controversial topic sometimes may be rebuffed by his own peers. Thus, a fifth-grade child in a current events class reported that, if a certain statesman in a country upon which demands were being made would yield to these demands, there would be no war for the time being. He immediately was challenged, and a debate ensued. The child stuck to his guns, stating that he was not arguing *whether* the statesman should accede or any of the merits of the case but simply the proposition that, *if* the gentleman yielded, there would be no war for the time being. His opponents did not meet him on this proposition but, instead, spoke heatedly about the bad people who were making the demands, to which the original contributor replied that he quite agreed that the demands were not just but still insisted that this was not the point of the argument. When the issue was put to a vote, the rest of the class unanimously voted that this child had lost the debate, even though the argument never had been joined. Perhaps to save time, or perhaps to curb a predilection for hypothetical issues, the teacher tacitly concurred in the majority decision; and the child, who originally, by his own announcement, had presented his contribution as a "thought" question, was squelched by the time the class was ready to move on to the next topic.

The above observation serves also to illustrate the fact that the reasoning of a child, like the reasoning of an adult, will be decidedly influenced by his prejudices and desires.¹ There is no

¹ For an account of the relationship between belief and desire, see Lund (51).

way of overcoming this human disposition, but it can be taken into account to some degree. One procedure in taking this factor into account is to carry the "thinking" into the child's own territory, to have it tie in with an actual rather than a theoretical issue. What frequently happens is that a child will give good reasons (or answers) and put forth a good argument on a general proposition, then shift ground when the issue touches upon something that concerns him. In connection with a study of children's opinions on various subjects, children responded to the question as to whether we should go to war against "another country" if the people there spit on our flag. In the general run of classes, a majority of the children voted "yes," but in a few classes where the subject of war had been discussed a majority of the children voted "no," and when the subject was opened for discussion, they gave numerous reasons against wars of any and all kinds. Later, however, when the form of the question was changed so that a specific country against which there was a prejudice was named (in place of the indefinite form, "another country"), a large number of children changed their votes.

Likewise, in a project concerning the evaluation of certain radio programs, it was found that the children could make a fine showing in criticizing and tearing to pieces certain programs that were "trashy," "untrue to reality," or involved "silly happenings" and had no "genuine characters." But many children who had learned to verbalize some criteria and standards for judging programs in general had difficulty in seeing how these same standards applied to specific programs which they themselves happened to like. Accordingly, many children would name as a favorite a program which, according to the standards they had enunciated, was very much like other programs that had been condemned. For such children, the evaluation project still had some value, no doubt; for it added words to the children's vocabulary, even if it did not change their stand on a concrete issue.

To carry every "thinking exercise" into the ground of the child's own experience and concerns would, of course, be impossible; but

sometimes it is possible at least to make a gesture in that direction. For example, in connection with the social studies at school, many of the "big" issues have their parallels in everyday life, on a smaller scale. Wars in the grand manner have their more prosaic and somewhat less bloody counterparts in the everyday feuds and quarrels between individuals and groups; problems of conservation lie not in the dust belt alone but right outside (and sometimes uncomfortably inside) the door; the economic and human realities involved in economic, political, and social issues which children of elementary- and high-school age often are encouraged to "think" about in remote and abstract terms are duplicated, on a smaller scale, in numerous everyday situations that lie within the child's ken. To be sure, with children as with adults, the big problem often loses its appeal when it is translated in terms of its everyday manifestations, especially if it is further suggested that the solutions reached in the abstract should be applied concretely.

In the development of a child's concepts, there is no substitute for active learning and problem solving on his own part. However, in many situations, emphasis by a teacher on the generalizations to be acquired and efforts to illustrate and call attention to the way in which a general rule covers many specific instances, may enable the child to "get the idea" much more quickly than would be the case if emphasis is placed simply on specific rote learnings.¹

An important feature of reasoning consists in the exercise of raising hypotheses or tentative conclusions, then checking these and putting them to the test. Sometimes this can be done in a

¹ See, for example, a study by Thiele of the learning of generalizations in arithmetic (78). The problem as to the manner in which skills, attitudes, methods of approach, and habits of study acquired in connection with one intellectual exercise may transfer to the handling of other problems has been studied in many investigations, but, because of the many factors involved, no generally definitive conclusions of a practical sort can be drawn. For positive evidence concerning apparent transfer from one form of problem solving to another, see, for example, Barlow (4). For an illustration of the failure to find evidence that individual study and "research" projects undertaken by pupils in progressive schools transferred to the handling of problems involved in certain tests designed to measure aspects of "dynamic thinking," see Jersild, Thorndike, Goldman and Loftus (46).

practical way, as when one operates by trial and error with concrete materials, and often it is done by way of private *pros* and *cons* as one tries to seek a way out or argues with oneself, but an important aid in this process are the checks and tests that come through discussion with others. Accordingly, freedom to express an opinion or a conviction of one's own, and to take issue with statements made by others, may have much value. In the case of children, the questions brought to bear by an adult or by school-mates have a challenging effect and tend to help to promote improved deliberation. A problem arises, however, in connection with the use of the free discussion method, for what often happens is that motives other than those of a disinterested search for truth enter into it. As noted elsewhere, it was found in one study that in several classes there was little or no relationship between the amount individual pupils would talk and the amount they had to contribute, for many children seemed to talk more in order to be heard and to get attention than to advance the subject at hand. Moreover, discussion may merely serve as a means of pooling uninformed opinions, when a bit of individual fact finding or a word from the wise would dispose of an issue that the collective ignorance of many cannot solve.

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CHAPTER XII

CHILDREN'S MAKE-BELIEVE, DREAMS, AND OTHER IMAGINATIVE ACTIVITIES

Make-believe, phantasies, and other imaginative activities occupy an important place in the child's mental life. Even before he can fully express himself in words, a child may be able to play an imaginary role in pantomime.

EARLY MANIFESTATIONS OF MAKE-BELIEVE

From the early preschool years on into the early school years, much of children's social play involves make-believe themes, and, in time, imaginative activities likewise occur prominently in children's private phantasies and daydreams. In an analysis of verbatim records of children's language in the nursery school, Burnham (1) found that the percentage of remarks that were imaginative rose from 1.5 at twenty-four to twenty-nine months to 8.7 at forty-two to forty-seven months. In the age range from twenty-four to forty-eight months, remarks dealing with imaginary topics constituted from zero to as much as twenty-six per cent of all remarks that were made. In records of children's imaginative activities, as revealed both by their language and their overt behavior, Markey (9) found that the median child in a group with an average age of about two-and-a-half years, participated in six-and-a-half imaginative situations per two and a half hours. In an older group, with an average age of about forty months, the median number of imaginative situations during the same period of time was twenty-six; and in a still older group (average age, forty-three months), of somewhat lower average intelligence, the median number of situations was twenty-two.

FUNCTIONS AND UNDERLYING MOTIVES OF MAKE-BELIEVE

Make-believe activities serve many functions in the child's mental life and may spring from a variety of motives. Through his imagination, the child is able to carry on his thinking on a lower level of concentration, so to speak; he is enabled to solve problems that he cannot so easily handle when dealing with realities, to overcome vicariously some of his limitations, to transcend the restrictions of time and space, to bring the world more into line with his own desires, and to manipulate his environment with greater ease.

Numerous illustrations of the handiness of make-believe, as utilized by young children, are presented by Markey. Blocks now serve as a ferry to bring passengers across the river and then, without further ceremony, the ferry changes to a train. The make-believe enterprise may combine elements of reality and fantasy, truth and error, as when the train goes on red lights and stops on green, the radio is operated by coal, and a child who has made a sand pie offers it to another with the remark: "Drink my pie."

In his make-believe, the child may find a means of overcoming scruples and restraints that bear upon him in his actual experience, a vicarious outlet for his resentments and a means of avoidance or escape. Following are some illustrative episodes that were observed by Markey in a little experiment with a "housekeeping game," in which children were provided with small pieces of kitchen equipment and a "family" in the form of dolls. One boy proceeded at once to the dolls that represented the children; he called them "bad babies," put them on the toy stove, and said: "You've got to be dead; you've got to stay on there for three weeks." Then he proceeded imaginatively to break the house down and to burn the dolls, talking the while to call attention to the burning of the "bad babies" in the imaginary fire. The school records of this child revealed that he was very jealous of a baby brother and, at home, had shown delight at the baby's squirming and crying when his nose was being cleaned, just as now, in the imaginary situation, he seemed to relish the thought of watching

the baby burn. Another child, aged about three years, began to "make supper for the little girls"; she opened the icebox door, pretended to put food in it, placed one of the dolls in front of the icebox and said: "Dolly dear, we *always* leave the icebox door open." Here again the child's behavior was related to actual circumstances; the child's mother revealed that, to keep the youngster from raiding the icebox at home, it had finally become necessary to tie a heavy wire around the box, and one night the mother had discovered the child trying unsuccessfully, to the accompaniment of angry mutterings, to open the icebox. The child's remark to the doll seemed to describe a state of affairs that she hoped might prevail at home.

Escape by way of the imagination from a situation which to the child was unpleasant appeared in the case of a child of four-and-a-half years who announced to her mother: "I'm inventing a new paint for the bathtub. It will take twelve years to dry, and you can't use the bathtub for twelve years."¹

CONSTRUCTIVE USES OF MAKE-BELIEVE

Imaginary activities may serve as a means of constructive endeavor, as a means of organizing and giving expression to a child's interests. Frequently an imaginary theme serves as a basis for integrating various enterprises that the child has previously mastered as isolated performances; thus, a child may undertake a complicated picnic trip that combines the use of a wagon, activities involved in dressing dolls, a smattering of ideas concerning travel, geography, and distances, ideas and techniques involved in the planning and preparation of a picnic lunch, and so forth. Frequently, likewise, a child adds zest to a performance that otherwise would not be a full challenge to his powers, as when he plays the role of a dare-devil racer or fireman in riding his tricycle along

¹ Imaginary situations introduced by way of dolls, puppets, pictures, and play materials of various kinds have been used as a means for giving children an opportunity to reveal, in disguised form and on a vicarious level, problems and interests that they are reluctant or unable to reveal when questioned or interviewed. For a description of some of these methods, see Murphy and Horowitz (10) and Frank (3).

a precarious ridge, or scampers up and down high places that he previously has learned to climb. Again, he may use make-believe as a technique for winning favor with his playmates (as when he assigns them important roles or gives them flattering names) and as a means of assuming leadership (as in an earlier illustration in which a child gave the role of captain to a playmate and then proceeded to run both the captain and the ship).

In a large proportion of the make-believe activities of preschool children, the theme concerns domestic happenings and everyday routines, such as caring for the baby (doll), eating, and so on. Many activities deal with travel by auto, train, or ship, and animals also figure quite prominently.

DAYDREAMS AND PHANTASIES

Toward the end of the preschool period and throughout later years, more and more of a child's imaginary activities take the form of private phantasies and daydreams. These private phantasies, like the earlier more overtly expressed forms of make-believe, may variously serve as a means of riddance, escape, compensation, fulfillment of desire, vicarious adventure and excitement, and may, in the process, provide a means for the exercise of many interests and ideas. In most of such daydreams, the child plays a dramatic and heroic role, and utilizes powers, abilities, privileges, and opportunities that normally lie beyond his reach. In a large proportion of these phantasies, the child projects himself into roles and scenes that are more remote from everyday happenings than are the make-believe activities of an earlier age. Daydreams of one sort or another are likely to continue throughout life. The themes involved and the extent to which the individual indulges may vary from time to time as different life situations arise, and at different times the daydream may range from the abandonment of sheer fancy to an ordered procession of ideas. Whatever may be the degree of unreality involved, such enterprises will be related in some way to the individual's everyday problems and desires.

At the school age, an undertaking that begins as a fanciful daydream may end as a form of businesslike problem solving. Thus, an eight-year-old boy rides, in his fancies, jauntily over the Western range on a fine horse, ready for combat with horse thieves, coyotes, or whatever adventure the terrain may afford. But as the plot unfolds, his activities become increasingly complex. He has a trusty rifle and a belt of ammunition at the start; but when he stops to camp, he needs materials for making a fire, cooking utensils, and what not, so he finds it is necessary to pretend that he had an extra pack horse with him from the beginning. As the tale goes on, he may find himself so burdened with equipment, horses, and other paraphernalia that the job of planning and ordering things in the daydream becomes nearly as strenuous as a problem in arithmetic. This tendency for a daydream to bog down under its own weight as it calls for more and more ingenuity and "thinking" frequently occurs in adults and spoils what might otherwise have been a fine time.¹

IMAGINARY COMPANIONS

Peculiarly vivid imagery is sometimes found in the phenomenon of "imaginary companions," which seems most likely to occur between the ages of approximately four and ten, although it may occur sooner and, in a few cases, persist beyond the age of ten.² The imaginary companion, who may be a person, an object, or an animal, appears in some cases to be almost as vivid as an hallucination; and unlike the usual phantasy, which is episodic and fluctuating, the imagined object will tend to be relatively stable while it lasts. The vividness of this phenomenon is illustrated by the following case: A girl of four screamed a warning to her father as he was in the act of sitting down on a sofa; when questioned, she reported that her imaginary playmate (a monkey)

¹ A study by Griffiths (5) deals in an illuminating way with the imaginative activities of children of preschool age. A book by Green (4) discusses the make-believe activities of older children.

² For illustrative findings on the subject of imaginary companions, see Hurlock and Burstein (7), and Svendsen (11).

was having a sick spell and had just soiled the cushion on which her father was about to sit. Such peculiarly vivid images differ in degree, rather than in kind, from the less spectacular imagery that occurs in the experience of nearly everyone.

SOURCES OF THE CONTENTS OF MAKE-BELIEVE

Everything that occurs in children's imaginative activity is drawn from previous experiences. The child's observations of events about him, pictures that he sees and tales that he reads or hears, provide the material for his fancy, but the elements drawn from different sources may be combined in such fantastic ways that his imagining seems quite remote from anything he has met in actual experience. Yet, however bizarre the imagining may be, it doesn't "just happen"; for the flow of events, the roles that are assumed, and the emotional tone of the enterprise are related to features of the child's actual experiences, his problems and desires.

In a study by the interview method (8), 400 children, aged five to twelve, were asked to describe their daydreams and imaginary companions. Over thirty per cent of the daydreams reported dealt with amusements, play, or some form of diversion. Specific mention of some form of self-glorification—of prestige or playing a superior or heroic role—was made in nineteen per cent of the cases; many children also reported daydreams about specific objects which they wished to possess.

In this study, it was found that inability to describe any make-believe activity occurred more frequently among younger than among older children and more frequently among the less intelligent than among the more intelligent. Also, younger children and less intelligent children of all ages reported a larger proportion of daydreams dealing with specific objects and amusements than did the older and the more intelligent. The brighter the child, the more likely he is to entertain daydreams with a plot.

When asked about their imagined playmates, only about a third of the children observed in this study described creatures that

seemed to have fairly definite and permanent characteristics. (It must be recognized, however, that the interview method is not as well suited to a study of imaginary companions as is direct and more intimate observation.) The number of boys who reported companionships with special objects—such as a particular piece of furniture, a block, a toy, and so forth—corresponded closely to the number of girls who described companionships with dolls. Girls reported imaginary boy companions more often than boys reported girl companions, but the number in each case was small. The companions were more often of the same sex as the child himself or consisted of animals and objects. Children who were able to describe make-believe companions had higher intelligence quotients than those who reported that they entertained no such imagined characters.

VIVID IMAGERY AND ASSOCIATION OF IMAGES

In addition to ordinary make-believe, special forms of imagery may be observed in some children. People differ in the vividness of their images; at one extreme are those who have difficulty in forming a clear image of an absent event, while at the other are individuals who report images almost as vivid as the impression derived if the event were actually before them.

A phenomenon known as synaesthesia also may occur in children of school age (and perhaps at an earlier time), as well as among adults.¹ A sensation from one sense modality has associated with it images from another modality. In "colored hearing," the individual reports, for example, that bass tones look blue and high soprano tones look pink. Or the synaesthesia may take the form of colors associated with certain names, as when a child of six reports that Mildred, her friend, is blue and Margaret is yellow, the number "17" is pink, and the word "rush" is gray. Tones likewise may accompany words, according to the testimony of those who report this phenomenon; thus, "paper" brings an

¹ For an interesting account of a case of synaesthesia persisting over a period of years, see Hollingworth and Weischer (6).

association of soprano tones, "piazza" carries a tinkling sound, and so on. The origin of the phenomenon is often difficult to trace. Undoubtedly, experiences in the past have resulted in a more than usually vivid association between different sense impressions, so that the recurrence of one now revives the other; yet this conjecture leaves still unanswered the question as to why some individuals seem more susceptible than others.

CHILDREN'S DREAMS

The content of children's dreams, like the content of their waking fancies, consists of material drawn from actual experience. Even more than in waking fancies, however, the events and emotional elements combined in a dream may be so diverse and confused that it is difficult to trace them to their source.

There is little information available as to the age at which the average child begins to dream. Undoubtedly, much in the nature of dreaming takes place before the child is able to give a clear description. Sometimes the first sign of dreaming occurs when a child makes outcries in his sleep or awakens in apparent fright, as in the case of a child aged two and a half who woke up during the night, cried, and said that a cat was under the bed, and an hour later again awakened his parents and complained about a cat. The age at which the first signs of dreaming appear, as reported by parents, varies considerably with different children. A few children, as well as adults, according to their own reports, never have the experience of dreaming.

The following dream of an adolescent boy illustrates some of the interplay of sensory impressions, past recollections, and emotional complications that may occur in a dream: The door of the sleeper's room opened with a slight click and in stepped a large, spectral figure, clad in black. It approached the bed, and there was a grinding sound as it laid hands upon the sleeper's heart and slowly compressed it. Then, the next moment, the terrified sleeper found himself awake, standing against the farther wall of his bedroom.

When he had composed himself, the dreamer was able to describe the following situation: In the dream, he had felt that he was dying because his heartbeats were being forcibly stopped; on awakening, he found that one arm was slightly paralyzed—in his sleep, he had rested upon the arm in such a way as to cut off the circulation. He related next that, two weeks earlier, he had attended the funeral of his father, who had died suddenly of heart disease—another item that apparently turned his dream toward the malfunctioning of the heart. Moreover, he observed that a breeze was moving the door of his room, causing a slight clicking of the latch; here, apparently, was the cue to the opening of the door as the specter entered the room. And he noticed also that a sound came from the water pipes of an adjoining room; here, apparently, was the cue to the sound in his dream. Finally, on the floor of his bedroom was an open umbrella, which he had stretched to dry after he had taken a walk in the rain, and this black object lay in the line of vision from the head of the bed to a window which admitted a dim light; the image of this black, dimly defined object perhaps was the cue to the black-clad specter that had attacked him. Thus, recollections from the past, a previous waking fear of heart disease (and perhaps many unidentified emotional associations connected with the dead father), and stimuli actually affecting his sense organs contributed to the terrifying content of his dream.

Dreams are puzzling only in the sense that all mental activity is baffling; the dream seems more mysterious at times than some of our waking activities because the conglomeration of events that it includes are difficult to untangle. Everything that occurs during waking life as the result of sensory stimulation and anything that occurs in the nature of fear, fancy, and desire may find its way into dreams, but the elements of imagery and emotion may be highly distorted and the logic of the happenings may be highly obscure.

In the interview study mentioned previously in this chapter, 400 children between the ages of five and twelve were questioned

TABLE XXXI
PERCENTAGE DISTRIBUTION OF DREAMS REPORTED BY CHILDREN (WHEN ASKED ABOUT DREAMS WITHOUT SPECIFICATION AS TO "GOOD," "BAD," OR RECURRENT)¹

Type of Dream	All Children	Age Groups				Sex Groups		School Groups		I.Q. Groups			School Groups Matched in Age, Sex, I.Q.		
		Age Groups				Sex Groups		School Groups		I.Q. Groups			School Groups Matched in Age, Sex, I.Q.		
		Age Groups				Sex Groups		School Groups		I.Q. Groups			School Groups Matched in Age, Sex, I.Q.		
		5-6	7-8	9-10	11-12	Boys	Girls	Pri- vate	Pub- lic	120 and Above	100- 119	80-99	Pri- vate	Pub- lic	I.Q. 120 and Above
I. Possession of toys, food, money, etc.	7.4	6.1	8.4	7.7	7.2	7.9	7.0	5.3	8.9	5.2	8.7	8.2	5.7	6.1	6.3
II. Flying and levitation.	0.3	0.8	0.3	0.0	0.0	0.5	0.0	0.6	0.0	0.3	0.4	0.0	1.3	0.0	0.0
III. Travel, diversions, amusements, play.	9.5	6.9	8.4	10.7	11.6	10.0	9.0	9.8	9.2	9.2	10.4	7.8	13.4	8.8	12.7
IV. Everyday events, objects, persons	9.5	15.0	10.5	6.0	7.2	8.7	10.2	6.5	11.6	6.2	10.1	13.3	7.6	12.3	8.9
V. Association with relatives and friends.	3.6	2.4	4.8	3.0	3.8	2.3	4.8	4.3	3.1	4.2	3.3	3.1	4.5	2.6	3.8
VI. Marriage and parenthood.	1.4	1.2	0.9	1.0	2.4	0.9	1.8	1.0	1.6	0.3	2.1	1.6	2.6	0.9	0.0
VII. Beneficent elves, fairies, magic happenings.	3.0	4.5	3.6	2.7	1.4	2.1	3.8	3.1	2.9	3.0	3.9	1.2	3.8	7.0	3.8
VIII. Prestige, achievement, independence.	4.7	0.8	3.9	4.4	9.3	4.6	4.8	4.7	4.7	4.7	3.9	6.3	4.5	3.1	6.3
IX. Benefits for relatives, altruistic activities.	1.3	1.6	0.3	1.3	2.1	0.9	1.7	0.4	1.9	0.5	1.4	2.4	0.0	1.3	0.0
X. Movies, stories, etc. (apparently not fear-inspiring).	2.8	2.0	1.8	5.0	2.4	2.6	3.0	2.5	3.1	2.2	1.9	5.5	2.6	1.8	1.3
XI. Sensory forms, colors, and designs.	0.3	0.4	0.3	0.7	0.0	0.5	0.2	0.4	0.3	0.5	0.4	0.0	0.0	0.4	0.0
XII. Poverty, loss, breakage of property.	1.4	1.2	1.2	1.0	2.1	0.7	2.0	1.8	1.0	1.5	1.4	1.2	1.9	0.4	0.0

XIII.	Embarrassing and guilty behavior, reprimands.....	1.1	0.8	1.2	1.0	1.4	1.1	1.2	1.6	0.7	1.5	1.2	0.4	1.9	1.8	0.0	1.3
XIV.	Being powerless, losing flesh....	2.6	1.2	3.0	4.0	2.1	2.8	2.5	4.5	1.3	4.7	1.7	1.2	2.6	0.4	4.7	1.3
XV.	Movies, stories of mystery, murder, etc.....	3.7	2.8	3.6	5.0	3.1	4.4	3.0	2.7	4.4	2.0	3.5	6.7	3.8	1.3	1.2	2.5
XVI.	Apparitions, terrifying sights, nightmares.....	4.1	2.0	2.7	5.4	6.2	4.0	4.2	3.9	4.3	5.0	3.3	4.3	3.2	7.0	4.7	7.6
XVII.	Strange people and places, the dark, etc.....	7.3	7.7	7.2	8.0	6.5	7.2	7.5	10.8	4.8	9.5	6.6	5.5	10.2	7.9	9.4	5.1
XVIII.	Noises.....	1.3	1.6	1.2	1.0	1.4	1.2	1.3	1.8	0.9	2.2	0.8	0.8	0.6	0.0	1.2	1.3
XIX.	Successful fights, escapes, ride of unpleasantness.....	2.7	2.8	3.9	2.7	1.4	3.3	2.2	3.1	2.5	3.7	2.1	2.4	1.3	1.3	2.4	2.5
XX.	Falling, being in high places....	1.7	0.8	0.6	2.7	2.7	2.6	0.8	1.8	1.6	1.8	1.6	2.0	1.3	1.8	2.4	0.0
XXI.	Collisions, diving.....	2.2	2.0	3.0	2.0	1.7	2.1	2.3	2.7	1.9	2.7	1.6	2.7	1.3	0.4	3.5	1.3
XXII.	Loss, death, sickness of parents or other relatives.....	3.1	2.8	3.3	3.0	3.4	2.1	4.2	2.2	3.8	2.7	3.1	3.9	2.6	2.2	1.2	5.1
XXIII.	Other misfortunes befaling relatives and others.....	0.2	0.8	0.0	0.0	0.0	0.0	0.3	0.0	0.3	0.3	0.2	0.0	0.0	0.0	0.0	1.3
XXIV.	Accidents, injuries, punishment, fighting, etc.....	8.7	10.9	7.5	8.0	8.9	11.0	6.5	9.8	7.9	10.7	8.1	6.7	8.3	11.4	9.4	10.1
XXV.	Being chased, threatened, etc....	6.4	6.5	10.2	3.0	5.5	5.9	6.8	5.7	6.9	5.5	7.2	6.3	5.7	7.9	4.7	3.8
XXVI.	Ghosts, bogeys, etc.....	2.8	2.8	4.2	3.0	1.0	3.7	2.0	2.9	2.8	3.0	3.3	1.6	2.6	3.5	1.2	2.5
XXVII.	Fires, storms, catastrophes.....	2.9	3.6	2.1	3.7	2.4	2.8	3.0	2.2	3.4	2.7	3.1	2.7	2.6	4.4	3.5	6.3
XXVIII.	Unintelligible.....	0.7	2.8	0.3	0.0	0.0	0.4	1.0	0.2	1.0	0.5	0.8	0.8	0.0	0.9	0.0	1.3
XXIX.	Don't dream, can't remember....	3.4	4.9	2.1	4.0	3.1	3.9	3.0	3.7	3.2	3.5	4.3	1.6	4.5	3.1	7.1	3.8
	Number of children questioned...	400	100	100	100	100	200	200	160	240	129	175	96	53	53	27	27
	Number of items reported.....	1173	247	335	299	292	572	601	490	683	401	517	255	157	228	85	79

¹ Adapted from Jersild, A. T., Markey, F. V., and Jersild, C. L.: *Children's Fears, Dreams, Wishes, Daydreams, Likes, Dislikes, Phantasies and Unpleasant Memories*, Child Development Monographs (New York: Teachers College, Columbia University, 1933), No. 12, 172 pp. Reproduced by permission.

about their dreams. They were first asked simply to tell what they dreamed about and then to describe the dreams in detail. They were then asked to tell about their recurrent dreams and their pleasant and unpleasant dreams. At the end of the interview, each child was asked what kind of dreams he had most frequently, dreams he liked or dreams he did not like; and he was also asked whether he wished he would have no more dreams of any kind. The dreams reported by the children were classified under general descriptive headings. A summary of some of the results is given in Table XXXI, which shows the relative frequency of various classes of dreams at different ages. Each of the general classes named in the table represents a combination of several smaller categories that are illustrated in detail in the original study.

In the replies of the children, it appeared that a child's dreams are likely to reflect any kind of event, whether real or imagined, that occurs during his waking life. The similarities in the general content of dreams of children of the age of five and six, as compared with those of children aged eleven and twelve, are more outstanding than the differences. Exceptions to this general rule appeared in a few minor categories, as shown in the table.

The unpleasant dreams reported by the children somewhat more closely resembled their fears, as described in response to other questions, than the unpleasant events that actually had befallen them.¹ The children named dreams that appeared to be unpleasant somewhat more frequently than pleasant dreams. When asked whether they wished never to dream any more, less than half of the children expressed a definite desire to continue to dream.

Most of the children in this study appeared to speak without embarrassment or restraint. They reported few dreams dealing explicitly with sex; but undoubtedly, children would hesitate to give details if they had actually had sexual dreams. When older

¹ The study by Griffiths, referred to above, describes ways in which children's dreams are related to their emotional problems.

individuals are questioned, many will report that they had dreams of a sexual character at the age of ten or earlier. Sensations from the sex organs and experiences dealing with sex during the day are likely to be involved in dreams, just as are any other sensations and experiences. There is, however, no convincing evidence that sex plays a larger role in the normal person's dreams than in his waking moments.

Unpleasant Dreams. Unpleasant dreams, nightmares, and night terrors are a frequent source of distress in children and often cause parental concern. A large percentage of children have rather intensely unpleasant dreams. The extent to which unpleasant dreams occur and some of the symptoms and conditions associated with unpleasant dreams have been described in a study by Foster and Anderson (2), in coöperation with a large number of parents who kept records of their children's dreams for a seven-day period. The parents and children in this study represented all socio-economic levels but included a larger percentage in the upper socio-economic strata than is found in a normal sampling of the population. Some of the findings, as revealed through classification of the reports submitted by parents are summarized in Table XXXII. The first entry shows the average frequency per week of various evidences of unpleasant dreams. From the frequencies shown for moaning and coming to an adult during the night, it can be inferred that a rather large number of the dreams recorded by the parents must have been quite disturbing to the children. The second entry shows that over forty per cent of the children at the one- to four-year level exhibited at least one unpleasant dream during the seven-day period; the percentage drops to twenty-two at the nine-to-twelve level. Section C of the table indicates, among other things, that there is an increase with age in the percentage of dreams involving personal difficulties and a decline in dreams in which the unpleasantness is represented by animals and the dark and the unknown.

In descriptions of causes of the unpleasant dreams, overexcite-

TABLE XXXII

EVIDENCES AND FREQUENCIES OF UNPLEASANT DREAMS EXHIBITED BY
519 CHILDREN, AS REPORTED BY PARENTS WHO KEPT RECORDS
FOR A SEVEN-DAY PERIOD¹

<i>Age in Years</i>	1-4	5-8	9-12
<i>Number of Children</i>	81	215	223
A. Average Frequency Per Week of Various Evidences of Unpleasant Dreams:			
Moans during the night . . . . .	.81	.57	.17
Comes to adult . . . . .	.18	.16	.05
Reports bad dream in the morning . . . . .	.21	.42	.26
Any evidence of bad dreaming . . . . .	.93	.71	.39
B. Percentage of Children Having Some Unpleasant Dreams During the Week	43.0	39.2	22.2
C. Subject Matter of Bad Dreams (Percentages):			
Personal difficulties	26.7	33.3	54.5
Difficulties of friends, pets	13.3	6.3	18.2
Animals (probably strange or fearful)	40.0	15.9	9.1
Strange or bad people	6.7	20.6	13.6
The unknown, dark, etc.	6.7	7.9	.0
Loss of property . . . . .	.0	4.6	.0
Impersonal dangers	6.7	9.5	.0
Miscellaneous . . . . .	.0	1.6	4.5

ment or fear was named 137 times and the child's physical condition 71 times. Some specific conditions that were described as having precipitated unpleasant dreams and their frequency, follow: frightening stories read or heard, 31; extreme emotional state of child, 25; illness, 22; fatigue, 21; radio programs, 19; the day's experiences, 19; movies, 18; food or time food was eaten, 18; conflicts with playmates, 11; physical conditions at night, 10; too strenuous play, 10; funny papers, 4; and noises, 2. Some other findings were that children sleeping in a room alone had fewer unpleasant dreams than children sharing a bed with another child and many fewer than children sharing a bed with an adult, and that the better the general state of the child's health, the fewer the unpleasant dreams. No reliable differences appeared in comparisons between boys and girls.

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CHAPTER XIII

CHILDREN'S IDEALS, MORALS, AND RELIGION

This chapter deals briefly with aspects of the moral development of children, the development of standards of conduct, children's attitudes, their heroes and ideals, and some factors in the development of religious concepts.

FACTORS IN THE MORAL TRAINING OF CHILDREN

From an early age, children are exhorted by adults (oftentimes more or less half-heartedly, to be sure) to be peaceable in their dealings with others, generous, helpful, and virtuous. Children learn, at an early age, more or less clearly to recognize the "good" things they should do and the "bad" they should not do.

The development of an individual's moral standards and moral conduct is influenced by factors as complex and varied as those which influence all aspects of a child's mental, social, and emotional development. On the intellectual side, moral conduct involves knowledge of standards and the ability to perceive the situations in which they may be applied. On the social and emotional sides, moral conduct is influenced by emotional factors in the individual's private life and all the innate or acquired dispositions that determine his relations with his fellows. Even an individual's physical status plays a part, in so far as it influences his attitudes and adjustments, and, in certain situations, his motor competence may be a crucial factor.

Development of Moral Concepts. A child's earliest formulation of what is right and wrong, good or bad, is, of course, largely determined by the rules laid down by his elders. At first, his notions of right and wrong concern specific acts and situations; in time, he learns more and more to formulate standards of conduct in general terms and to judge a specific situation in terms of

the general rule, although this type of generalization seldom is complete, even in mature years. In time, likewise, he learns to formulate (or to rationalize) standards of conduct in his own terms and to give reasons for them, rather than simply to state that a thing is right because his mother and father have told him so and wrong because they say it is bad and punishable. For example, at first he may regard the act of grabbing another's toy as wrong because his mother has told him it is bad, and later he may say: "It isn't fair or honest," or "It would make him feel bad," or "I wouldn't want him to do that to me, so why should I do it to him?" or some such statement. The advance from authoritarian standards to full acceptance and formulation of abstract concepts of equality, fairness, and justice is seldom thoroughgoing; even in mature years, a good deal of a person's conformity to rules of conduct is dictated by social pressures and frequently by fear of the consequences of nonconformity.

In the development of moral concepts, children do not pass through distinct stages; rather, they learn to couch more and more of their ideas of right and wrong in adult terms. Children are able at an early age to phrase some of their ideas of right and wrong in rather mature terms. This is illustrated in a study by Harrower (13), who questioned children aged about six to eleven years concerning their ideas of cheating as follows: "Why must you not copy from your neighbor? What do you think about cheating?" In the case of children coming from homes of relatively high educational and socio-economic status, the most frequent type of answer at six to about eleven years concerned the practical uselessness of cheating: "It doesn't do any good. One can't learn that way." In the case of children from a poorer environment, the most frequent type of answer at six to eight years was an appeal to authority: "Cheating is forbidden," "It is naughty," "It is a lie." At eight to eleven years, the type of answer most frequently given by the underprivileged group was to the effect that cheating is unfair: "It is not fair play."

In this study, Harrower (13) also questioned children concern-

ing their ideas of punishment. First, they were told a little tale about two boys, Peter and Tommy, who were playing together. Peter had a lovely new engine and Tommy had a boat. Naughty Tommy suddenly kicked Peter's engine and smashed it. Now, what should be done with naughty Tommy? Should he be "smacked" (appeal to authority and a retaliatory concept of punishment), or should his own boat be broken up (the idea of reciprocity, an eye for an eye), or should he be made to save up his pocket money until he can buy Peter a new engine (the idea of equity, restitution or making amends)? Again in response to these questions, a majority of the poorer children, in the age range from six to eight years, gave the authoritarian answer: "Smack him." At eight to eleven years, a majority of the poorer children gave the third type of answer: "He should make up for the damage." On the other hand, a large majority of children from more privileged homes, both at the age range from six to eight and from eight to eleven gave the answer that Tommy should replace the toy that he had broken. (The factor of intelligence and the factor of difficulty in obtaining pocket money, quite apart from notions of justice or punishment, perhaps had some influence with the poorer children.) In both groups and at both age ranges, the "eye-for-an-eye" (break his toy) type of answer occurred relatively infrequently.

In appraising a child's moral concepts, as in appraising his concepts on any topic, the answer a child gives to a direct question may quite fail to reveal the extent of his understanding. This is especially likely to be the case if he is being called to account for a misdeed or if a question, in one way or another, puts him on the defensive. He may answer evasively, giving any reply that seems to be expedient, and sometimes his replies will be inconsistent,¹ as is likely also to be the case with adults.

Correspondence of Children's Ideas of Right and Wrong to the Ideas of Adults. In a study by Lockhart (22), school children in

¹ See, for example, a study by Carmichael of the behavior of children when called to account for past irregularities (5).

the fourth grade and above were compared with graduate students and lawyers in their attitudes toward certain laws. Twenty laws were selected, and various circumstances were described which provided motives for disobeying them, such as the saving of a human life when to do so would violate a law. It was found that, as children grow older, they learn more and more to regard the law much as adults do. In the group as a whole, there were not, however, significant differences between the children's responses and those of adult students and lawyers.

Problems in the Moral Training of Children. Many factors complicate the moral training of children. For one thing, the moral injunctions are likely to clash with practical pressures in everyday life. For example, as Fite (10) has shown, a child of three or four years may be strongly admonished by his parents never to hit or fight. But in the play group of which he is a member, there is a good deal of aggression, and a certain amount of hitting and fighting is practically taken for granted, so that there is a conflict between the lessons that have been impressed upon the child as to what is "right" and "good" and the habits of the group to which he belongs. Moreover, if the child is a sociable creature, occasions are bound to arise when he is practically forced to defend his interests and his rights. If the child does not rise to his own defense, he practically is denied the freedom to share and enjoy the social contacts and opportunities afforded by the group situation. On the other hand, when occasionally his moral fiber is put to too strong a test and he does take the aggressive, his response may lack spontaneity and he may, even at an early age, experience feelings of guilt. Such an impasse might be avoided, to some extent at least, if the principles impressed upon the child by adults were weighed, as far as possible, in terms of practical circumstances. An adult's abstract moral stand against aggression may be splendid as a general rule of conduct and yet may be artificial and needlessly rigid when brought to bear against the normal little tussles which arise in the social relations of young children. Training in morals and good

conduct should proceed with due regard for the abilities and problems of children at different stages of their growth.

Confusing and Conflicting Pressures. The moral training of a child at any age level is complicated by the fact that many confusing influences are being brought to bear upon him. For one thing, the moral admonitions which he gets from his parents and teachers often will be incompatible with the examples set by them. He is urged to be friendly in his dealings with others and yet he may recognize that a teacher who makes this admonition is carrying on a feud with another teacher and perhaps is showing favoritism toward individual pupils in the class. He is admonished against anger and vindictiveness and yet witnesses many examples of such behavior in the daily conduct of his preceptors. One of the most serious problems in the moral training of children arises from the hypocrisy of those who try to teach him. This discrepancy between what is professed and practiced by his elders may arise, in part, from the fact that his elders themselves are struggling with the difficulty that the spirit is willing but the flesh is weak or that they are genuinely uncertain as to what is the proper thing to do. Examples of discrepancies between what is preached and what is practiced by those who set up to be his moral guide could be multiplied indefinitely. Since adults are only human beings, some discrepancies are inevitable, but this does not solve the child's problem.

Apart from the fact that adults frequently are confused and take divided counsel within themselves, there is a further fact that different adults, whose influence is brought directly or indirectly to bear upon the child, may differ in the stand they take with regard to a given form of conduct. Adults in authority in the home may set different standards from adults in authority outside the home, and within the same family conflicting pressures may be brought to bear by the father and mother.

A further element of confusion arises from the child's difficulty in distinguishing between general rules of conduct and more specific rules of the game. Under some circumstances, a lie—

whether white, black or gray—is regarded as reprehensible by his elders; under other circumstances, a similar lie may not only be tolerated but encouraged. Again, depending upon the prejudices of the parent, a charitable attitude is required with regard to one group, while the same parent tolerates uncharitable attitudes toward other persons or groups.

Discrepancy of Words and Deeds. Inconsistencies, such as those shown by adults, between expressed ideas as to what is the proper conduct and what is actually practiced are exhibited by children at an early age. Most children, for example, will profess that cheating is bad, and yet a large percentage of them will cheat when an occasion arises. If one visits elementary-school classrooms, one can easily see many illustrations of the divorcement of verbal patterns and actual conduct. In a given class, for example, the children exhibited a high moral tone and laid down many fine moral precepts when discussing standards of behavior and the responsibilities of the individual to his group; but within a few minutes after this discussion, the very pupils who participated most violated all the precepts which they had just endorsed. Again, children may extol in the abstract principles of fair dealing and sharing, and then violate these very principles even while discussing them (as when some children insist on holding the floor, refuse to give an equal hearing to others, and seek to dictate the course of events).

Manifestations of this discrepancy can be found at all age levels, extending down into the preschool years. In the study by Fite, referred to above, it was noted that a child might maintain during an interview that hitting was bad and then, in his actual behavior on the playground, exhibit a good deal of hitting. Another child might, during an interview, express the view that hitting was not particularly bad, but in his actual conduct exhibit less hitting than a youngster who verbally expressed a strong stand against hitting.

There may be a discrepancy even on a purely verbal level between acceptance of what the children have come to understand as “good” and their translation of this into something concrete.

In connection with a study by the writer and his associates (19), a number of children were asked, among other things, what they would do if they had a lot of money. In one of the schools in the study, a rather large percentage of the children stated that they would do good for others, and many of them described large philanthropic ventures. When, at a later time, the interviewer casually asked each of a number of such children what he would do if he found a quarter on the way home, it did not occur to any child that he might begin the good work on a small scale with a small sum. Here the children responded in terms of their own immediate interests. Obviously, responses such as the foregoing can readily be matched in the behavior of adults.

Observations such as these do not constitute an argument against moral or religious training, but they do emphasize the problem that is involved in getting precepts into line with practice. They suggest, among other things, that there is a need for presenting precepts in such a way that they are intelligible, concrete, are reinforced by the example set by others and show the way toward specific skills and practices. They also suggest the need for scaling the instruction to the child's level of growth. To be sure, it would be impossible to achieve an exact balance here, and it may be recognized that the moral instruction which a child receives may exert an influence on his behavior in the long run, even if it has no apparent immediate effects.

Emotional Adjustment and Moral Conduct. A child's ability to do the "right thing" depends not merely upon his ability to perceive the issue at stake and his knowledge of specific ways of conducting himself but also upon his emotional stability. Feelings of resentment or fear may block the expression of benign social impulses; also, such inner tensions may precipitate what seem to be benign social impulses that actually operate only as calculated means of winning approval from others or as temporary relief from his own distress.

The Factor of Self-Help and Everyday Skills. Furthermore, a very important feature of moral development concerns the acqui-

sition of prosaic skills and techniques for handling one's own affairs and for dealing properly with others. In a practical situation, a child who has learned to be reasonably tidy in his room, to take ten minutes rather than an hour to dress himself, to comb his own hair, to vacate the bathroom after a few minutes, to adjust somewhat to the convenience of the household in his use of the radio, to wash the dishes without breaking too many, to fend for himself in traffic, to feed the dog regularly when he has demanded the privilege of having a dog, and to do all his various chores and homely duties with dispatch is, to that extent, more virtuous than the child who is constantly demanding help and attention.

Honesty. Deceit in one form or another can be noticed in children at an early age. The child of three or younger may, to prevent discovery, hide a toy that he has broken or assume an innocent expression and feign ignorance when confronted with his misdeeds. At an even earlier age, he may pretend to be in great distress, by means of exaggerated cries or expressions of pain, to gain attention. And when he learns to talk, "I can't" frequently is far from the truth, meaning simply "I won't." He may also resort to definite falsehoods to gain his ends. Occasionally, however, what appears to be untruthfulness may mean that the child misunderstands or is unable to distinguish between the fancied and the real; a child will sometimes tell a tale which is spun out of his own phantasies. Fabrications of this kind may appear to be a bid for attention, although many of the untruths spoken by the imaginative child are merely playful and can hardly be classed as deceit. It is dishonesty of the sort that is used for some practical end, either to escape discomfort or to gain something desired, which is most significant in the study of character, especially if an advantage is thus gained at the expense of others.

Many studies of children's lying and deceit have been made, outstanding among which is an extensive study by Hartshorne and May (14). This study included nearly 11,000 school children of varying cultural, socioeconomic backgrounds and intelligence, and numerous ingenious tests, designed to provide an ob-

jective test of honesty, were used. These tests included opportunities to cheat in classroom work, in athletic contests, in games, and in schoolwork done at home; they included also opportunities to give false answers in reply to questions concerning personal conduct and to steal coins (under conditions which appeared entirely safe to the child).

Following are some of the general findings of this study, based upon statistical treatment which isolated each of several factors for separate study: Older pupils are slightly more deceptive than younger children. On particular tests, some sex differences appear; but, in general, there is no outstanding difference in the deceptiveness of boys and girls. There is a positive relationship between honesty and intelligence; children of the higher levels of intelligence deceive definitely less than the children of lower intelligence. The tests revealed, however, no significant relationship between honesty and physical condition, although children who showed symptoms of emotional instability (as measured independently by a standard test) showed a greater tendency toward deceptiveness than those who were better adjusted emotionally.

The relationship between deceptiveness and the socio-economic status of parents parallels the relationship found in measurements of intelligence. When children were classified into four occupational levels, according to socio-economic status, those at the highest level deceived the least, those at the second and third highest levels progressively more, and those at the lowest level, the most.

Children belonging to the same family resembled each other more in honesty and deceptiveness than children matched at random; the authors believe it is possible that children would vary in deceptiveness even if all were brought up under similar conditions. Furthermore, there was a positive relationship between cheating and low marks in school deportment. Among still other relationships which appeared were the following: Children who were friends, even though not members of the same class, showed more than a chance resemblance in the amount of cheating; children who cheated less tended to be less suggestible; children who

attended the movies often tended to cheat more than those who attended less frequently; children who were in the charge of a teacher who was able to stimulate coöperation and good will cheated less than those who were taught under a more conventional and rigid routine; children who were members of organizations purporting, as one of their aims, to teach honesty, cheated about as much as nonmembers.

The findings in this study indicate that there is no generalized, uniform trait that can be labeled "honesty" that characterizes the child in all his activities. The child who lies, steals, or cheats in one situation may be quite without guile in another; he may be a brazen cheater when given a chance to copy in a test and be completely honorable in an athletic contest. The likelihood that a child will cheat in a particular situation will be influenced in part by some pervasive factors that are always present—such as ability, home background, and age—but also largely by the nature of the particular situation that confronts him and his feelings and motives with respect to it.

These findings with regard to honesty illustrate the fact that both nature and nurture play a role in determining an individual's adjustments. One is not born honest or dishonest; nor does it follow that because one has a lower than average I.Q. he will be dishonest in his behavior. Inasmuch as deceit offers a means of meeting a difficulty, the person who is poor in wit is more likely to need and to use methods which are classed as dishonest in solving certain problems. A person of high intelligence is likely to be more able to make certain adjustments without being deceptive. Still, the dishonest are found among the bright and dull alike. Apparently because of a difference in the events of their past lives, we may find a highly intelligent child who is a consummate reprobate, while a decidedly less gifted child may be a model of virtue.

The chief motives for deception set forth in the study above may be listed under such general headings as: revenge; jealousy and envy; self-defense; desire to compensate oneself for loss or for

a handicap; loyalty to friends or a cause; aggressive greed for property, approval, or prestige; and so forth.

It may be noted that, even though there was found to be a definite relationship between deceit and such factors as age, intelligence, and the socio-economic background, the relationship was not so pronounced as to make it possible to predict the behavior of a particular individual. Nor is it possible, simply through knowing what a child did in one situation, to predict what he will do in a quite different situation, although such a prediction would undoubtedly be more accurate if we knew more concerning the child's motives and the degree to which different situations are likely to involve similar discrepancies between desires and abilities.

Generosity. In an extensive investigation, Hartshorne and May (15) used objective methods to study generosity and the readiness to serve others: Willingness to give up ice cream for the sake of helping someone else, to vote money (which each child actually received) to charity, to surrender attractive objects (in a kit which each child received as a present), to prepare materials for children in a hospital, and to work as hard for the group as for oneself are among the items that were tested. In this study, as in the study of deceit, it was found that the intercorrelations between the various tests were positive but low. Although it is probable that a child who is generous in one test will show the same tendency, rather than the opposite, in another situation, one cannot with any degree of confidence predict from a single episode just what his behavior in general will be.

No consistent changes in the readiness to serve others were observed with relation to age. Bright children were somewhat more coöperative than normal and dull children; but the relationship between generosity and intelligence was quite low, as compared with the correlation between honesty and intelligence. Girls were somewhat more coöperative than boys. There was only a slight association between coöperativeness and physical condition or emotional stability. Children from the higher occupational levels were somewhat more coöperative than those from the lower

levels, but the relationship was small. There was some resemblance between children from the same family, and friends resembled each other more than classmates chosen at random, although less than children within the same family. Again, those who attended Sunday school were somewhat more coöperative than those who did not, but the difference was slight. Children who were more suggestible (as measured by a test of suggestibility) were somewhat less coöperative than the average, while those who were less suggestible were more coöperative. Also, children who were more sociable than the average did not tend to be more coöperative than the average.

These statements suggest some of the general conditions that will influence the child's degree of generosity, but here, as in the measurement of other forms of behavior, much remains unsolved. It is significant, of course, that children from the same family resembled each other a good deal; yet it seems that the effect of home training varies. The resemblance between siblings, when measured with respect to generosity, was not as high on the whole as the resemblance found in measurements of their intelligence.

CHILDREN'S HEROES AND IDEALS

Some insight into a child's values and his ideas as to what constitutes model conduct can be gained from his choice of heroes and ideals. To be sure, when a child names a given character as his hero or ideal, one cannot be certain how genuine his attachment may be; one child may name someone whom he himself sincerely admires and tries to emulate, while another may simply mention a character whose name he knows only through popular hearsay.

In various studies, several thousand children have been asked questions such as: "Of all the persons you have heard or read about or seen, whom would you most care to be like?" or: "Whom do you admire most?"¹

¹ Among investigations dealing with this topic are studies by Bateman (3), Barnes (1), Hill (16, 17), Gilbertsen (11), Goddard (12), and Macaulay (23).

Table XXXIII summarizes the results obtained in one study; here the children's replies have been classified under a number of general headings.

TABLE XXXIII

SOURCES OF IDEALS CHOSEN BY URBAN CHILDREN FROM THREE CITIES¹
(Showing the distribution, in percentages, of various classes of ideals at successive age levels.)

<i>Sources of Ideals</i>	<i>Distribution in Percentages</i>									
	<i>Age 6-8</i>	<i>Age 9</i>	<i>Age 10</i>	<i>Age 11</i>	<i>Age 12</i>	<i>Age 13</i>	<i>Age 14</i>	<i>Age 15</i>	<i>Age 16</i>	<i>Age 17-20</i>
Characters from the immediate environment....	58.2	44.5	37.9	35.1	30.0	29.8	28.5	27.5	29.8	27.4
Historic and public characters.....	32.3	44.9	53.0	54.7	61.3	61.3	64.5	64.2	60.5	61.3
Characters from fiction....	2.2	3.7	3.5	3.9	2.4	3.3	1.4	2.5	2.5	2.8
Characters from religion ^a ..	3.0	2.4	1.7	1.7	2.6	1.9	1.5	1.3	1.8	2.4

^a A class labeled "miscellany," which brings the total to 100 per cent in each column, is not reproduced.

It will be noted in Table XXXIII that there is a marked decline with age in ideals chosen from the immediate environment and an increase with age (from six to twelve years) in ideals chosen from history or from current public affairs. Characters from fiction and from religion are mentioned by only a few children at each age level and show only small changes with age. Comparisons between boys and girls, which are not reproduced in the table above, show that girls choose ideals from the immediate environment considerably more frequently than do boys, a difference that appears at each age level; when results from all ages are combined, 46.5 per cent of the ideals chosen by girls are from their immediate environment, as compared with only 19.9 per cent in the case of the boys. From the age of eleven to the age of twenty, 40 per cent or more of the girls chose characters from the immediate environment, while similar choices by the boys dropped from 26 to 11 per cent. On the other hand, boys consistently

¹ Adapted from Hill, D. S.: "Personification of Ideals by Urban Children," *Journal of Social Psychology* (1930), Vol. I: 379-392. Reproduced by permission.

selected historical or public characters more often than did the girls.

The age trends shown in Table XXXIII appear even more strikingly in a study reported by Macaulay (23). The children in this study, 1,600 in number, wrote answers to the question: "What person whom you have ever known, or of whom you have ever heard or read would you most wish to be like?" Following is the percentage of children at successive age levels who chose *acquaintances* as their ideals:

Age	7	8	9	10	11	12	13	14	15
Percentage	65	59	40	32	24	17	8	2	3

In this study, likewise, girls chose more characters from their immediate circle of relatives, acquaintances and friends than did the boys. Girls also chose male characters more often than boys chose female characters.

The fact that the range of characters whom children admire widens more and more beyond the immediate home environment as children grow older is not surprising, but it still gives quite a striking indication of the widening with age of the ranges of a child's interests and values. An earlier study by Hill (16) shows changes with age in the tendency of children to regard their parents as their heroes and ideals. At seven years, thirty per cent of the children who were questioned named fathers or mothers as their ideals. At ten years, this percentage had dropped to nine, and it showed a further drop to *zero* by the age of fifteen. To be sure, this change might be due, not so much to the fact that the children admired their parents less, but rather to the fact that they had come to admire someone else more; and certainly it cannot be concluded that the influence of the parents wanes to a corresponding degree. No doubt, a different result would be obtained if children were asked, for example, whom they cared for most.

If one could inquire into the reason for a child's choice when he names his ideal, one would undoubtedly find an enormous variety

of motives and interests. Two children might name the same character, such as Abraham Lincoln, but the nature of the appeal of this character might be quite different in each case. Apart from this, the matter of children's heroes and ideals is quite important from the point of view of social psychology and education. Whatever may be the motives or the sincerity underlying each child's choice, the ideals that he chooses symbolize, to some degree, the values that have been stressed in the culture in which he lives and the values within that culture that appeal to him most. In individual cases, a child's choice of an ideal may tell much concerning his private attitudes toward home and school and society at large. In informal studies, it has been found, for example, that individual maladjusted children in the upper elementary grades may carry their revolt so far that they defy tradition, refuse even to pay lip service to conventional morals, and name a celebrated criminal as their hero and ideal.

RELIGION

Practically all children in a culture such as ours obtain some degree of familiarity with religious practices, ideas, and beliefs, whether or not parents give them religious instruction in the home or send them to church. As Conklin has pointed out (7), religion plays a large part in the lives of most people in one way or another. The tendency of children is to accept, rather than to reject, what they hear and read, especially if it ties in with their own desires and interests, and as long as they meet with no direct contradictions. Parents who do not provide religious instruction sometimes discover that a child, through his conversation with others and his reading, has accepted many religious beliefs and occasionally a child whose parents disavow religion may even acquire the habit of praying quite regularly for a time. This interest in religious matters varies considerably, however, with different children.

Factors Influencing the Meaning of Religious Teachings. A child's religious ideas and images will, of necessity, be influenced

by his experiences in everyday life, and this fact presents a practical issue to parents and teachers who endeavor to give religious instruction. If the instruction is to be genuine, it must not merely come by way of verbal precepts but must be interpreted also by the practical example set by the child's elders. A child's image of God the Father may include a confused blend of details from pictures he has seen and Bible stories he has heard. The image may fluctuate from time to time, including now a kindly expression, now a wrathful countenance. His conception of the attributes of a fatherly God will be influenced, perhaps imperceptibly, by his experience of the attributes of his own father or of others who occupy a paternal role. His ideas of sin will be influenced by his experiences of grief or remorse through having caused distress to other persons and by experiences flowing from transgressions against persons who are in authority. His ideas of forgiveness will be influenced by his own experience of being forgiven by his elders; and the idea of forgiveness may be a difficult one for him to grasp if, in his own relations with his elders, he finds it impossible to confide or confess his troubles and must bottle up his feelings of guilt and fears of retribution. (On the other hand, lack of anyone in the everyday environment in whom to confide may, under some circumstances, impel a person toward religion.) The child's response to any aspect of religious instruction will be influenced by parental examples and evidences of parental sincerity.

The younger the child, the more his ideas in matters of religion, as in other matters, will be built upon his own concrete experiences, frequently elaborated by phantasies. His ideas may be influenced by a multitude of conditions, such as the physical appearance, atmosphere, and facilities of the church; the odors and echoes of the church building; or the confinement of movement imposed upon him if he must sit quietly longer than is agreeable to his limited attention span, the kindliness or austerity of his teachers, and so forth.

From early childhood through the elementary-school years,

numerous religious concepts will have relatively little meaning to him in the abstract, and a problem in religious education is how to translate religious concepts into terms that are meaningful.¹ Misconceptions through failure to understand the terms that are used can be seen when the child, for example, comes home and tells his mother about Jesus' twelve bicycles (disciples), or sings: "A wonderful guy (guide) is He," or is puzzled by "the consecrated cross-eyed bear" (the consecrated Cross, I'd bear). Children also are confused at times by denominational differences, and frequently they have difficulty in distinguishing between the form and intended substance of religious observances.

In a brief passage, Murphy (28) has tried to construct a picture, from the child's point of view, of the way Jesus is sometimes presented. Children are likely to learn of Him, "not as an ideal grown-up who helped people, but as a little baby whose mother put him in a straw thing in a barn instead of a crib, and to whom queer-looking men in striped gowns brought presents no baby could use. They learn, too, that there was a bad king, with a ferocious face, of whom the baby's mother was afraid, so that she had to take him a long way from home, riding on an animal that is not seen in the city, nor even in the zoo."

One problem which many children who receive religious instruction face at an early age is that their own innocent, and even quite genuine, interpretations and versions of religious events and relations are rebuked by their parents and religious teachers. Sometimes the statements made by children represent, from an adult point of view, vulgarity or even sacrilege, but the manner of correcting such statements may make a great deal of difference.

Interest in the Bible. Children's interest in Biblical characters and scenes and in different portions of the Bible have been studied by Dawson (9) in an investigation conducted some years ago in a New England community. Since results of such a study are likely to be influenced by the religious background and affiliations of the

¹For an account of children's difficulty in understanding religious terms and concepts, see Bose (4), Tanner (34), Barnes (2), and Case (6).

children involved and might also vary over a period of time, the findings cannot be regarded as typical for all children who have had religious training, but the general trends noted are interesting. For example, quite definite age trends appear in preferences for various books of the Bible. Up to eight or nine years, the children expressed most interest in accounts of the birth and childhood of Jesus and in stories concerning the childhood of characters such as Moses, Samuel, Joseph, and David. From nine to thirteen or fourteen years, portions of the Old Testament, especially the historical books, had greatest appeal. At about the age of fourteen, and from then until twenty (the upper age level in the study) interest in the historical sections receded, and there was a distinctly preponderant interest in the Gospels. Dawson also shows "age curves" for other portions of the Bible; from the age of about ten through adolescence, poetic sections of the Bible appealed to numerous children, although the number who chose these sections was considerably smaller than the number who selected the historical books and the Gospels. Books of prophecy received a few votes from the age of twelve and onward; the Proverbs and doctrinal sections received relatively little mention until about the adolescent period and then were preferred by relatively few children. At all ages, children expressed more interest in persons than in other elements of the Bible.

Children's Prayers. One of the many aspects of childhood religion that adults have difficulty in understanding from the child's point of view is prayer. The approach that is made in teaching the child to pray often involves parents in many pitfalls, as when they teach the child to approach God as though He were an absent-minded magician, given to granting any reckless or thoughtless petition that might be addressed to Him. The idea of praying to a higher power is usually accepted quite readily by children, who, in their experiences, frequently have occasion to be reminded of their own limitations and unfulfilled desires. The desires that lie back of the child's frequent "I wish" or "If only I had" and which he realizes vicariously in his own make-believe can readily

be translated into the petition: "Please give." It is considerably easier, it appears, to lead a child to petition that his passing desires be granted than to petition that he be helped to have desires and aspirations of the kind that should be granted and the determination to carry out these aspirations. The same, to be sure, holds true also of adults.

Although the "pennies-from-heaven" type of prayer is easier to learn—and also readily leads to some perplexity when the pennies are not forthcoming—it has been observed that children who receive religious instruction can, at a relatively early age, learn to voice prayers more in keeping with theological interpretations of the purpose of prayer. Frequently, a child will recite prayers that he has been taught without understanding what they mean and then proceed to express prayers of his own in less conventional language. In a study by MacLean (24), it was found that a large proportion of children in primary Sunday-school classes described prayer in terms of "talking to God," with emphasis more frequently upon such factors as help in doing right, avoiding wrong, help in "trying harder to get the things we want," and thanksgiving than upon requests for concrete gifts. Children in the junior and intermediate classes likewise carried out this emphasis. In response to a questionnaire, ninety-five per cent of the children expressed agreement with the statement: "When I talk to God, I often find out what is right for me to do"; ninety per cent expressed agreement with the statement: "God answers prayers mostly when we do our best to answer them ourselves"; and eighty-five per cent agreed: "God won't give us anything we ask for, but He knows what is best for us and gives us that." In this group of Sunday-school children, six per cent expressed agreement with the statement: "It doesn't do a fellow any good to pray."

Sherrill (33) cites the case of a five-year-old child (who must have been somewhat precocious) who was overheard to pray: "Father in Heaven, help me to be kind and good, . . . to know what's what; help me to know what is good and what is bad, and what is poison and what is not poison, and what is right and what

is wrong. Amen.”¹ A child may also be moved to voice thanksgiving, as in the case of an eight-year-old boy who, while walking homeward after having delivered milk to a neighbor on Christmas Eve, with snow under foot and a clear sky above, and with keen anticipation of a good dinner and gifts to come, turned his eyes skyward and exclaimed: “Gosh, God, you’re good, and help everybody to be happy like me!”

Effects of Religious Training. The influence of religious training on children has not been studied at all in a systematic manner. In the general literature of psychology, there are miscellaneous findings dealing, for example, with such points as the honesty of children who have attended Sunday school and of children who have not (as measured by little tests that give the children an opportunity to cheat), the generosity of such children (again as measured by limited test situations), the degree of “liberal-mindedness” (as defined by the investigator) of members of various religious denominations and of nonmembers, the religious affiliations of delinquents, and so forth. Such studies, while instructive as far as they go, have dealt with the problem in a manner that is limited and inconclusive. Obviously, this problem is one that is difficult to explore in a scientific way, especially since many ends sought by religious instruction are designed to reside in the subjective realm of faith and hope, and since the good works that religion fosters are supposed to be done with a minimum of fanfare. Even if such measurement were possible, it would be difficult to find a “control” group with which to compare the religiously trained individual, since religious influences are deeply imbedded in the culture and there is a large degree of overlapping between the overt morals and virtues that are promoted under religious and nonreligious auspices. Individuals who disclaim any religious affiliation are likely to be affected, to a large extent, by religious influences; and as far as the commonplace virtues are concerned, many of the “unco guid and rigidly righteous” in-

¹ Adapted from Sherrill, L. J.: *The Opening Doors of Childhood* (New York: Macmillan, 1939), 193 pp. Reproduced by permission.

dividuals are persons who have taken over the moral precepts of a religious denomination while fervently disclaiming any religious faith. By reason of this large overlap between the kind of training and influence brought to bear upon technically religious and nonreligious individuals, it is difficult adequately to measure the effects of religious training on the more commonplace expressions of moral conduct.

Apart from this overlap on many points between those who ostensibly have religious affiliations and those who do not, there also are large variations in the religious influences brought to bear upon children who technically receive religious instruction. One child, for example, may be sent to church by parents who never themselves attend, while in another case the entire family may participate; in one case, the religious practices of the child's elders may be quite perfunctory, or represent a form of social conformity, while in another, they occupy an important place in the family's everyday activities; in one case, the child's attention may be centered only upon some of the externals of religion, and in another his training may be under the auspices of parents and teachers whose religion is a matter of deep feeling and concern. Thus there may be a decided psychological difference between the experiences of two individuals whose training, as measured only by the criterion of church-attendance, appear to be quite similar. It would be necessary to take some account of such differences if one were trying to measure the effects of religious training upon the more obvious aspects of moral conduct. It would also be necessary to recognize the fact that although children can achieve socially accepted conduct without formal religious training, such instruction might serve, for those who receive it, as a factor in formulating principles of conduct and in motivating behavior.

Even more difficult to measure are the subtle and indirect influences. In her study of sympathy, Murphy (28) reports an incidental observation concerning the relation of the behavior of young children to the religious background of the children's parents. The influence of the church appeared to go beyond the

influences exerted by contact with children who attended church or by teaching or story telling from religious books; the influences were difficult "to detach from the deepest personality characteristics of the parents who had been identified with it (the church)." Among the children in the Murphy study, there were eight whose parents had been or who were then identified with the church. With one exception, the children were less aggressive than the median child in the group as a whole. In some of the children, the observers noted manifestations of gentleness and considerateness that seemed to indicate that patterns of kindness had become deeply assimilated by the families to which the children belonged. These observations, obviously, are not presented as conclusive; other children in other groups might not conform at all to this trend. But the observations are suggestive in pointing the way toward a line of study to discover some of the subtler ways in which a religious background in the home might be reflected in the everyday behavior of children.

A study of the effects of religious instruction would not only have to cover ground such as the foregoing but it would have to appraise the more subjective phenomena denoted by such terms as peace of mind, relief from feeling guilt, hopefulness, the disposition to be forgiving and patient, and the like.

The problems encountered on the research side are further complicated by problems of definition as to what is meant by religion. Efforts to define religion frequently wind up with a long string of words that have little or no relation to the practices and teachings of religion as encountered in everyday life. From a practical point of view, the question as to whether parents should provide religious instruction involves, not so much the matter of achieving an academic formulation of their own as to what religion means, as it does a choice in terms of the forms and channels of religious instruction that are available (plus enough acquaintanceship with local geography to know what churches are available in the community and where they can be found).

SOCIAL ATTITUDES

Altruistic Wishes. Partly, no doubt, through increased realization of what is expected of them and partly perhaps through an increase in genuine concern for others, children tend increasingly with age to take account of others and their welfare in their own private preoccupations. An indication of this trend is shown by studies of children's wishes. In a study represented in Table XXIX, Chapter XI, for example, it was found that the percentage of wishes concerning "benefits for relatives" rose from about three to fifteen per cent from the age of five and six years to the age of eleven and twelve years; the same comparison shows a rise in general philanthropic wishes from three to thirteen per cent of the total (19). A study by Washburne (36) shows a rise in wishes for the welfare of others in the age range from ten to seventeen years; the rise was larger in the case of girls (twenty-two per cent) than in the case of boys (eleven per cent).¹

As suggested at an earlier point, there may be quite a discrepancy between expressed wishes and actual altruistic activities, but the trend is of interest none the less. That altruistic impulses may be quite impermanent and superficial is indicated in a study by Moore (26) of high-school children. Sixty-six per cent of the children in this study answered "yes" when asked whether, prior to the present year, they had ever felt, for a period of several days, a strong impulse to give their lives to helping certain classes of people who are suffering from poverty, ignorance, disease, or some other misfortune, or in helping to prevent these evils.² Those who answered "yes" were then asked to report specifically what

¹ This upswing in expressions of altruism apparently is halted sometime in late adolescence. Wilson (37) found that only about eight per cent of the wishes of college students dealt with philanthropies and general benefits for others. It is likely, however, that results will vary with different populations, and it is also possible that altruistic preoccupations express themselves more in the form of action than in the form of wishes at the older levels.

² It may be noted here that, when children are specifically questioned concerning altruistic impulses, a larger percentage will report such impulses than when they are asked (as in the other studies here reviewed) simply to mention their wishes, whatever these might be.

they had hoped to do; sixty-nine per cent gave concrete replies and thirty-one per cent gave vague replies or failed to answer. About a third of the children reported that they had abandoned these ambitions, and of those who reported they still had the ambition, about two thirds gave vague or general replies when asked how they proposed to carry out or to prepare themselves for carrying out their altruistic ambitions.

In passing, it is interesting to note that, although there is generally much agreement between boys and girls with regard to moral standards, there also is a tendency with time to accept the view that these standards should be somewhat more rigorous as applied to girls than as applied to boys. In a study of 1,500 college students by Katz and Allport (20), only half the men and sixty-nine per cent of the women reported the view that there should be equal or similar standards for men and women. Furthermore, a large percentage of persons regarded certain acts—such as drinking, illicit sex behavior, cursing, smoking, and gambling—as being more serious or bad if committed by women than if committed by men.

PREJUDICES

A child begins his career with no prejudices, but after a few years he is likely to have many. These may range all the way from strong and organized antipathies to relatively mild disposition to avoid or to look with indifference upon certain persons or groups.

Prejudices Acquired Through Direct Experience. Some prejudices rise through unpleasant events in the child's own direct experience, as when he is hurt or frightened by someone and retains a feeling of suspicion or ill will. This disposition may be confined to a specific individual or it may be generalized, as when he reacts unfavorably toward all members of a certain group—say, toward all people with whiskers, or all people with a certain skin color, or all people with prominent cheek bones. The prejudice may also be quite unique to his own experience, as when he

has an unfavorable attitude toward people who are in good favor with the rest of his family and other members of the community. Countless occasions for the development of an unfavorable attitude toward others arise in the give-and-take of everyday social contacts, sometimes by virtue of real grievances, sometimes by virtue of imagined affronts. Again, feelings of distrust or lack of fellow feeling may arise out of fear or uneasiness in response to persons who are strange, who differ in physiognomy or manner from the persons within the child's accustomed circle.

Varying degrees of liking and disliking for other individuals or groups inevitably arise in the experience of the individual child. Even when no distinct antipathies develop, some degree of discrimination in favor of certain persons and against others will arise by virtue of the fact that a child cannot have equally strong ties with everybody; there is a limit to the range of his active loyalties, and the very fact that he is affiliated with the individuals of one group may tend to increase his "social distance" from another group. This awareness of social distance is likely to be increased and may even give rise to a certain amount of suspiciousness and distrust if he discovers that he is viewed as an outsider by members of other groups—the children on the other side of the track, or the children belonging to a certain school or camp or church. The very loyalties that exist within one circle may serve as a barrier to members outside the circle and may lead to antagonism, especially if the outsider would like very much to join.

The Influence of the Child's Elders and of Culture Patterns. However, the more or less "natural" antipathies that arise in the normal flow of everyday experience with other persons and the friction that may arise in direct encounters between different groups of children represent only a small factor in the development of prejudices that prevail at any given time. More important are the influences that come at second hand, the prejudices passed on to the child by his elders, the attitudes that he comes to adopt through precept and example in the culture that surrounds him. He may be exposed to traditional antipathies that persist

as a hangover from an earlier period. He may, through his reading and through what he hears, acquire legendary prejudices against peoples with whom he has had no direct contact. Eventually he may even join in the indoor sport of trying to enhance his pride in his group, and thereby his own self-esteem, by belittling and defaming people of other races, classes, or nationalities.

Among the factors that make for prejudice, the influence of the home is very prominent. In countless situations, the child has an opportunity to absorb the prejudices of his father and his mother. The younger he is, the more ready he is to believe all that he hears and to adopt the parents' point of view. Frequently, prejudice thus has its inception in the home, even though neither of the two parents openly displays any antipathy for another group. The child may acquire an attitude of distrust simply by being exposed to family and cultural traditions which set the child and his people off from others. The very fact that a child is made aware of the national origin of his parents means that he is being influenced to identify himself with one group rather than another; and although pride in one's origin does not necessarily carry with it resentment of persons of different origin, still it carries the germ of partisanship and competition.

Countless influences may also operate outside the home. An example of this appears in a study of the effect of motion pictures by Peterson and Thurstone (30). In this study, children's attitudes on various subjects were tested before and after the showing of motion-picture films. It was found that children were less friendly toward Negroes after seeing the picture *The Birth of a Nation* than before. Likewise, one group of children showed a more friendly attitude toward the Chinese after seeing a picture that was favorable to the Chinese, while another group showed a less friendly attitude toward the Chinese after seeing a film that pictured Chinese people in an unfavorable light.

A Study of Racial Cleavage. Racial cleavage as related to age has been studied by Criswell (8). Criswell used the sociometric

technique of having each pupil in various classes in a number of schools list the pupil whom he would like most to have as a seatmate and the pupil whom he would like next best as a seatmate. The classes ranged from nine to ninety-five per cent Negro. In the lower grades, it was found that there were considerably more selection of members of another race than appeared in the later grades. White children restricted their choices to their own race to a larger extent than did Negro children. Even in the primary grades, however, race and color preferences were observed in the intersexual choices. In the first two grades, colored boys preferred white girls and then shifted their choice to light (slightly less colored) girls. Colored girls preferred light boys until Grade IV, then medium boys. White boys and girls preferred their own race, but choices of Negroes occurred as late as Grade VI or VII. By the eighth grade, choices of boys by girls or girls by boys had almost completely ceased to cross racial lines.

The Rationalization of Prejudice. Whatever may be the starting point of an unfavorable attitude toward a given group, a prejudice once begun is likely to find nourishment as time goes on. Even when only a mild degree of antipathy prevails, it is easy to find support and confirmation for this antipathy. Acts that may be ever so innocent or mild unpleasantnesses which normally would be ignored are interpreted in the light of the prejudice that already prevails. Let a member of our own group cheat or be rude or boisterous, and we hold this against the individual; but let a member of a group against which we are prejudiced commit the same acts, and we charge it, not only against him as a person, but also against the group to which he belongs. Such prejudices are likely to become all the more acute if complicated by rivalry and competition in the affairs of daily life. Frequently, of course, prejudices against other groups are merely a form of rationalization and a case of "sour grapes," and are often, as history shows, played upon for political and selfish purposes. Dispassionate teaching and, as far as possible, avoidance by parents and teachers of the practice of passing their ready-made

resentments down to their children, would, of course, go far to minimize prejudices.

Mutual Recrimination. One factor that helps to perpetuate and to intensify prejudice is the mutual recrimination that usually develops. In adult prejudices, we see a parallel to many of the problems connected with the elimination and treatment of anger in young children. Whoever may be at fault at the beginning, a vicious circle of self-defense and counterattack is started. The measures which an initially innocent person may take to protect himself against the unjust anger of another may simply convince the angry one that he has a just grievance. Each antagonist finds it difficult to take stock of himself. In the case of prejudices between groups, it would be helpful if members of opposing camps would be as zealous in inquiring into the reasons for their prejudice and seeking friendly means by which it might be dispelled as they are in deploring the folly and unfairness of their opponents. The average human being will not readily, however, subject himself to such dispassionate self-examination, and sometimes the odds of prejudice are so great that there is no other recourse than to fight back as best one can.¹

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¹For studies of the development of racial attitudes, see, for example, Lasker (21), Horowitz (18), Meltzer (25), Zeligs and Hendrickson (38), and a review of many studies by Murphy, Murphy, and Newcomb (27). A review by Nelson (29) deals with the general subject of attitudes, and numerous recent studies by Remmers and his associates, in *Bulletins of Purdue University*, have dealt with factors influencing changes in attitudes (31, 32, 35).

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CHAPTER XIV

CHILDREN'S INTERESTS

This chapter will deal only with selected aspects of the topic of children's interests, since practically all of the foregoing and succeeding chapters deal, in one way or another, with the activities children undertake on their own accord in following out their inclinations and in furthering their own purposes.

In an earlier section, we have noted how the young child seeks to exercise and put to use his growing abilities and powers. Just as "fish gotta swim, birds gotta fly," so the young child exercises his voice, his limbs, his mental machinery, and all his equipment as best he can. His early interests are a feature of the larger dynamic pattern of his growing capacities and powers. Throughout the period of growth, a child's active or potential interests are closely related to his abilities. However, after the basic coördinations involved in the use of his limbs have been established and after language has become established and the child has acquired some ability to plan and to weigh alternatives, the choices open to him become increasingly numerous and complex. As time passes, the channels through which he chooses to exercise his abilities are influenced to an increasing degree by opportunities that happen to come his way and by the conditioning effects of past experience. Generally speaking, the younger the child is, the more will the things he spontaneously *does* do give an indication of what he *can* do or can learn to like to do. (There are exceptions to this, as in the case of reactions to adult-made mental-test situations.) Thus, while still too immature to walk, the child does not show an active interest in walking, and efforts to coach him or force his progress are of little avail.¹ On the other hand, at the age of

¹ A further illustration is provided in a study in which it was found that two-year-old children showed little spontaneous interest in the process of dressing themselves, handling

eight, his lack of an active interest in riding a bicycle gives little indication as to whether he can learn to ride one or how much he would enjoy the riding once he has learned.

DIFFICULTIES IN ASCERTAINING CHILDREN'S INTERESTS

Sometimes a child will launch upon a project that seems to represent a genuine interest, as shown by his persistence and the ramification of his efforts. Thus, he may plunge into music, practice on his own accord, and study the works of favorite composers through reading, radio programs, attendance at concerts, and so forth; or he may delve into mechanics, digest the manual that came with his father's car, subscribe to magazines, spend his pocket money on equipment, and so forth. Often, however, children are more desultory in their interests or simply float with the tide of play activities engaged in by children of their own age and of projects engineered for them by parents and teachers. When this is the case, the interests that such children report or exhibit in their overt conduct at any given time may fail to reflect the fruitful enterprises that they might enjoy if given the proper opportunity.

DISPARITY BETWEEN EXPRESSED AND POTENTIAL INTERESTS

A method that frequently has been used to study the favorite occupations of children who are old enough to read has been to supply them with a long list of activities, with instructions to check those which they have recently undertaken on their own accord or to check those they like best. That such data are informative as far as they go but may quite fail to tell the whole story is indicated by Osborne in a study of children in summer camps (68). In checking the items of an "interest-finder" when they first arrived in camp, the children gave a high vote to baseball and other conventional pastimes, but these votes gave little indication of the interests that developed during the course of the camp

buttons, and so forth (53), and, in another, it was found that children at this age made relatively little progress when adults endeavored to coach and train them in buttoning (35).

season. For example, many of the children, when free to follow their own inclinations, developed an interest in sand play, even though they were of an age when children tend to regard such play as "baby stuff." From watching a resourceful camp counselor, they saw possibilities of architecture and design in sand play that were quite above the level of the mounds, holes, and furrows made by small children. Likewise, many of them acquired a strong interest and much competence in handicrafts of various sorts, again in a manner that could not be predicted from their original testimony. The behavior of these children revealed, as often is shown in the conduct of both children and adults in everyday life, that one's interests of the moment or one's neutral or negative attitude toward an activity give little indication of the potential appeal of untried activities.

As suggested above, the resourcefulness of the adult who is in charge is an important factor in lending appeal to one enterprise as compared with another; by virtue of what the teacher injects into it, a subject that is most popular in one school may be the least popular in another. Even the most resourceful teacher cannot, however, arouse interests that transcend the abilities of his pupils.

INTEREST AS RELATED TO SKILL

In the case even of the child who is left relatively "free" and uncoerced, a large number of interests arise, not so much from an original "felt need" for the particular enterprise in which he engages, as from indirect pressures or more comprehensive motives. His first venture in skating, for example, may be due less to a desire for skating as such than to a desire to follow the crowd or to conform to the wishes of his elders. Once he has acquired some mastery of the skill, however, it is likely to acquire an appeal of its own, so that he engages in it even if the original pressures no longer prevail. At a later age, he may undertake algebra and geometry as jobs that perforce must be done, then become increasingly absorbed as he gains competence, and perhaps go

on to do his life's work in the field of applied mathematics. This phenomenon of rising interest with rising competence can be seen in countless situations in everyday life, in the case of both children and adults. The reverse of this phenomenon also can frequently be seen. A child who is being pushed beyond his ability or who has gotten off to a bad start in reading, arithmetic, spelling, or any other project may acquire an increasing dislike for such a project as time goes on.

Concern for children's interests in an educational program does not consist simply in taking account of interests that the child may display at a given time; it consists even more in providing opportunities for the child to get a taste of skills and enterprises that extend beyond his own private preoccupations at any given time.

LIMITING FACTORS IN CHILDREN'S INTERESTS

Although the interests of children beyond the early preschool years are decidedly influenced by environmental conditions, they are, of course, subject to many limiting factors. Foremost among these is the child's underlying ability. The normal child who acquires an interest in long division and adapts it to his own purposes at the age of eleven would have difficulty in doing so at the age of six, regardless of his background or the ingenuity of his tutors. In like manner, while the bodily mechanics involved in catching and throwing a ball are still in process of development, a child will not acquire an interest in playing baseball as it is played by older children. Again, during early school years, he will not so readily learn and use the complex rules of play that an older child is able to grasp and enjoy. Likewise, during the early school grades, while he has not yet grasped large social relationships and is unable to comprehend remote social problems in terms of his own experience, he will not acquire a keen interest in studying and discussing large social affairs.

Apart from limitations of maturity, there will be controlling factors within the child's own make-up at any given time. Thus, one child may have more of a knack for music or art than another,

and his interests may be influenced accordingly. Similarly, native or acquired differences in motility, in sociability, or a tendency to be cautious or afraid may express themselves in widely different patterns of interest at any given age. Countless factors other than sheer ability in the child's "personality" determine his style of life and the organization of his interests. One thing, among others, that can be noted is the fact that an individual's apparent interest in specific enterprises may be quite subordinate to more pervasive motives; thus one child may be moved by envy or feelings of inferiority to exert himself in an enterprise which another child light-heartedly undertakes as something that carries its own appeal.

CHILDREN'S PREFERENCES IN GAMES

Surveys of favorite play activities reveal certain general age trends and certain differences between boys and girls, even though the order of popularity of different play activities varies somewhat according to locality, season, socio-economic background, and intelligence. Game preferences parallel, to a considerable degree, the trends in social development as described in Chapter VI. In the case of the infant, social play is largely in response to adults; and much of his private play consists in ventures in the use of his limbs, in handling and manipulating objects, in exploring his surroundings as soon as he is able to move about, and in acquainting himself with the texture, form, and taste of things. As noted in Chapter VI, once a child begins to join in play with other children, there is an increase with age in the frequency with which he lends himself to a group project, as distinguished from solitary enterprises; there tends to be an increase also in the size and duration of the groups with which he makes common cause. At the beginning of school age, the child is quite a socialized creature, but he also is still something of a lone wolf in his group contacts. The games in which six-year-olds participate jointly are likely to be games that involve a relatively low degree of organization, games that permit a good deal of individual freedom, as distin-

guished from complex and hard-and-fast rules (compare, for example, ball play at the six- or seven-year level, when children at this age are not directed or influenced by older persons, and the ball play at ten to twelve years). At six, and for some time to come, make-believe themes play a prominent part in children's play with one another.¹

Numerous references have been made in preceding chapters to some of the favorite activities of children of preschool age. The manner in which play parallels a child's motor development, for example, is noted in the description in Chapter IV of children's uses of doll carriages, wagons, and other wheel toys. As noted in this account, in the child's first encounter with a doll carriage, he may employ it partly as a means of support; later he pushes and pulls the carriage with more freedom; in time, he may try to propel the carriage (if it is large enough to permit this maneuver) and will use it as a means of transportation and in conjunction with other activities, until eventually the use of the vehicle may be quite incidental to a larger enterprise.

Findings regarding the activities and play materials preferred by preschool children have varied somewhat in different studies, largely, no doubt, by reason of the fact that no two play situations duplicate each other or provide the same range of choice.²

Among the toys which appeared to be most popular with a group of nursery-school children studied by Bott were "pattern toys" (beads, puzzles, peg boards, tinker builders) although the younger children used these toys chiefly as materials to manipulate and carry. Next in order of preference were "raw materials" (beans, blocks, color cubes, a blackboard and chalk, spools), and these were followed by locomotor toys (trains, wagons, tricycles). Small, mechanical toys were the least preferred.

¹ For an interesting account of changes with increased maturity in a child's activities and preoccupations, see Furfey (27).

² For representative studies of the play activities of preschool children, see Bott (6), Farwell (24), Van Alstyne (86), Manwell and Mengert (64), Benjamin (3), Vance and McCall (87), Hulson (39), Hostler (38), Johnson (51), Shallit (77), and Bridges (7).

Kindergarten and first- and second-grade school children's choices of indoor play materials have been studied by Farwell (24). Building materials, especially blocks, were most popular with boys, and painting and modeling materials ranked next; drawing and cardboard construction material were not very popular, and paper construction and sewing materials were least popular. Girls spent the most time with water-color painting and clay-modeling materials, and sewing came next in their preferences; they showed less preference for building blocks than boys. With age, there was a decline of interest in blocks. Girls' interest in paper-construction material increased somewhat in popularity from the kindergarten to the second-grade levels. Girls were found to be somewhat more interested than boys in other human beings and in furniture, while boys showed more interest in vehicles than did the girls.

The reactions of over 100 children to twenty-five play materials in nursery schools and kindergartens have been studied by Van Alstyne (86). From the ages of two to five years, a gradual change of interest in play materials was observed; but some materials, such as blocks, clay, and doll corners (including dolls, doll equipment, and furniture), appealed strongly to children of all age levels. Three-year-olds showed more interest than two-year-olds in wagons and books; four-year-olds showed an increased interest in balls, beads, small cars, and scissors; five-year-olds showed an increased interest in crayons. The youngest children tended to play more with active materials than with sedentary material, while, at the five-year level, there was about an equal interest in active and sedentary occupations. Boys showed more interest than girls in blocks, trucks, wagons, and small cars; girls showed more interest than boys in dolls, crayons, scissors, clay, colored cubes, and books. Boys tended to select materials that called for active play somewhat more than did the girls. These differences between boys and girls were not, however, as prominent as the similarities between the play interests of the two groups. Sex differences in play interests at the preschool level have likewise been observed in other studies.

Table XXXIV illustrates some of the play preferences of children at various grade levels; it is based upon reports by Minneapolis children who were asked to name their favorite activities. The table shows the five activities that were mentioned most frequently at each age level.

TABLE XXXIV
FAVORITE GAMES OF CHILDREN OF DIFFERENT AGES, IN ORDER
OF PREFERENCE¹
(A † means that the two games in question were tied for the same place.)

<i>Outdoor Games</i>		<i>Indoor Games</i>	
<i>Boys</i>	<i>Girls</i>	<i>Boys</i>	<i>Girls</i>
<i>Age 7</i>		<i>Age 7</i>	
Hide and seek Washington poke Baseball † Tag † Stoop tag	Hide and seek Tag Stillwater Stoop tag Jacks	Hide the thimble Checkers Cat and rat † Brownies and fairies † Farmer in the dell † Pop goes the weasel † Button button	Hide the thimble Rig-a-jig-jig † Checkers † House † London Bridge
<i>Age 8</i>		<i>Age 8</i>	
Hide and seek Tag Baseball Washington poke Stillwater	Hide and seek Tag Jacks Washington poke Jump rope	Checkers Hide the thimble Dominoes Brownies and fairies Cat and rat	Hide the thimble Checkers House School Dominoes
<i>Age 9</i>		<i>Age 9</i>	
Tag Hide and seek Baseball Washington poke Stillwater	Tag Jacks Hide and seek Washington poke Jump rope	Checkers Hide the thimble Dominoes † Old maid † Basketball	Hide the thimble Checkers House School Jacks
<i>Age 10</i>		<i>Age 10</i>	
Baseball Tag Hide and seek † Football † Washington poke	Jacks Tag Hide and seek Washington poke Baseball	Checkers Hide the thimble Basketball † Volleyball † Uncle Wiggly	Hide the thimble Checkers † Uncle Wiggly † Jacks † School
<i>Age 11</i>		<i>Age 11</i>	
Baseball Football Tag Hide and seek Run sheep run	Jacks Tag Hide and seek Baseball Run sheep run	Checkers Basketball Cards Hide the thimble Volleyball	Checkers Jacks Hide the thimble Cards School

¹ Adapted from Foster, J.: "Play Activities of Children in the First Six Grades," *Child Development* (1930), I: 248-254. Reproduced by permission.

As noted above, results of different studies in this field vary somewhat as to the order of popularity of various games.¹ Such differences may be due not only to actual differences in game preferences and opportunities at different levels but also to the season of the year when the study is made and the method of study that is employed. The data in Table XXXIV were obtained by asking children to name their favorite activities; they had no check list to serve as a reminder. A considerably larger number of activities would be listed if the children were supplied with a long check list. Again, as a study by Osborne shows (68), the use of the method of direct observation to watch and record just what children do in their play may reveal many things that the children themselves fail to mention in their own reports.

Without somewhat detailed description or supplementary observation, it is difficult to tell just what a child means when he reports a given item; thus two children may say that they like hiking, but one may be quite absorbed in this enterprise and put much endeavor into it, while the other actually gives little time or thought to it. Again, the very wording of a question may swing the response in one direction or another.²

When children check the number of activities in which they engage, there is a tendency toward a decrease with age in the number of different activities that are named (Lehman and Witty 59, 57). Older children also tend to engage in more solitary games. One study (58) indicated that educationally retarded and accelerated children engage in about the same number of play activities as do children who are making normal progress in school, but there appeared in this survey to be a marked tendency among pupils who had low progress quotients to turn to social play activities, as compared with children who made normal school progress.

¹ For other representative studies of children's play interests, see Lehman and Witty (57, 58, 59), Schwendener (76), Crosswell (16), Osburn (69), Hurlock (40), Roberts (75), Sheldon (78), Lehman (56), Johnson (50), Ellis and Hall (23) and (74).

² For findings concerning factors that make for inconsistency and unreliability in children's reports, see a study by Fitzpatrick of children's science interests (25).

Among the games that are dropped with advancing age are many that consist to a large degree of gross muscular coördination (such as tag, dodging, pom-pom-pull-away, run sheep run); many of the movements involved in these are incorporated into the more complex games that appear at later levels. Another form of play that diminishes sharply with increasing age is play of a make-believe sort, including playing cowboys, Indians, cops and robbers, house, and play with dolls.

The decline with age is not limited, however, to make-believe games and relatively simple physical enterprises, for there is a high degree of mortality of games that require considerable skill and coördination. As children advance toward adolescence, many of them tend to move from the role of a participator to that of a spectator. Much of the activity stressed in their own games and many of the activities stressed in directed play periods at school fall into disuse. One of the activities most widely emphasized in recreational and physical-education programs, for example, is baseball; yet, after the elementary years, large numbers of children seldom take or find occasion to play baseball. To be sure, play activities and games have served their purpose if they are sufficient to the time and age level at which they flourish. But much of children's play is not influenced solely by their own spontaneous interests but is engineered by older persons. To the extent that the latter is true, it might perhaps be highly worth while to sponsor motor activities and interests that not only will be valuable during childhood but can also be carried over into adult years. One activity, among others, that adults frequently adopt through desire or a sense of duty is hiking and tramping. Those who can combine this with an interest in nature or in exploring and making trails are especially fortunate, for their walks then consist of more than simply the dubious pleasure of putting one foot ahead of the other, under the prod of conscience. Oftentimes, when adults display such a taste, it is an outgrowth of interests which they had an opportunity to develop when they were young. This is only one example, perhaps not an especially good one, of hobbies and

abiding interests that might be of much value in childhood and likewise carry over into later years.

An incidental problem in making practical arrangements for children's play arises in connection with the provision of play space and recreation centers. It appears that this problem is not solved simply by giving the children a large amount of space and equipment, for many children, while making use at times of available space, will also be interested in playing on the streets and congregating where adults are going about their affairs. An interesting indication of this is provided in a study by Reeves (71), based on a survey of street play in a large number of cities. It was found that a large proportion of the children (boys more than girls) in a large sampling of cities were simply "hanging around" on the streets during their free time; on the average, less than half of the children who were in the streets were actively playing, and only a small proportion played organized games. The percentage of children on the streets bore little relationship to the amount of open play space available in the city. The extent to which children frequent the streets when play space is available will vary, however, with the attractions afforded by the playgrounds. In many instances, it has been observed that children are more likely to go to a playground if there is an able adult supervisor, but this aspect of the problem has not been studied systematically. In the case of younger children, it has been found that children who for a long time have attended nursery-school and kindergarten frequently become somewhat bored with repetitious play activities and look to adults for ideas and stimulation. As noted above, a child's ability to master and enjoy a performance may quite exceed his ability to invent or improvise a performance that will serve as a proper challenge to his powers.

READING INTERESTS

The beginnings of reading interests appear in the young child's desire for storytelling and being read to. When the child himself has learned to read, his reading activities and interests show certain

age trends, both in the amount read and in the range of topics read; there are large individual differences within each age level, however, and frequently it is difficult to tell to what extent children's interests have been influenced by custom and what happens to be available.¹ Among trends that have been noted are the following:

Prior to the age of five, many children show a fondness for simple factual stories about happenings in the everyday environment, animal stories, nature stories, rhymes and jingles, and stories illustrated by pictures that can be discussed with an older person.² At the school-age level, there is an increase with age in the percentage of children who read books of their own volition. A review of the literature on this subject by Gray (31) indicates that this trend continues into the junior high-school level, when divergent trends appear. In some schools, children continue to read widely, while in other groups there is a slackening in amount of independent reading.

Reading interests during the primary- and elementary-school period differ widely, depending in part on such factors as differences in intelligence, available materials, and the stimulus supplied by the child's associates and his elders. That interests at the primary-school level are not highly specialized is shown in a study by Dunn (20). The children liked surprise and plot; stories about animals had a good deal of appeal to boys, and stories about children and familiar experiences had considerable appeal to girls. There was no evidence that children at the primary-school level were in an "age of pure fancy" or that legends and folk tales, as a class, were the most interesting materials.

With increasing age, there comes an increased interest in robust adventure, especially in the case of the boys; realistic stories about

¹ The literature dealing with children's reading interests is huge. For representative reports of original findings or reviews of findings, see Gates (28), Gray (30, 31), Terman and Lima (81), Dunn (20), and Washburne and Vogel (90).

² Note how such interests in stories parallel characteristics of the children's own imaginative play. As described in Chapter XII, the make-believe themes of preschool children deal to a large extent with household affairs and other everyday activities.

animals likewise have much appeal. During the elementary years, girls tend to show more interest than do the boys in stories of home life and domestic happenings, and girls also show an earlier interest than do boys in romance. From a study of children in the fourth, fifth, and sixth grades, Lazar (55) found that the following elements had considerable appeal: adventure, action, excitement, thrills, mystery, realism, suspense, child life, humor-mischief, animal life and nature, sportsmanship and bravery, sports, airplanes and other inventions. Toward the junior-high-school and the high-school age, an increasing number of children show an interest in history, biography, and in books and magazine articles dealing with the social and natural environment. Girls show more interest in sentimental fiction of the adult type than do boys, but both girls and boys are likely cheerfully to digest fictional materials that distort realities and deal with impossible situations. In addition to such trends, there is an increased taste for humor, and there is likely also to be some reading in connection with hobbies, how to make things, and the like (Gray, 30).

Interest in Fact and Fancy. In their reading, children are both romanticists and realists. They will read fictional books that deal with situations that are not only impossible but absurd, but the same children may also read solid discussions of travel, biography, descriptions of other lands and people, and similar topics. Although children are thus quite catholic in their tastes and take in their stride both authentic and unauthentic materials, they do exercise some critical powers in going from one kind of reading matter to another. If they have sought out a book that deals with actual happenings, they like to have a truthful and informative account, although they may prefer treatment of the dramatic and unusual to a systematic treatment of all phases of a topic.

That children prefer straightforward, factual material in books dealing with science and that adults may be quite mistaken in their judgment as to the probable appeal of a book has been shown by Williams (91). In this study, library records were first obtained of the circulation of a large variety of books; then a

carefully selected aggregation of thirty-five books was made available to groups of children, for them to use as they pleased, while an observer recorded what they did and said. Following this, each child was interviewed. It appeared that the children showed a good deal more sense in judging a science book than adults give them credit for. Among other things, they were not much influenced by the color and design of a book's cover or by general features of format; the content is what interested them most. They wanted informative content—new information, explanations of how animals live and how things work—rather than rhapsodies about the glories of nature and the wonders of the subject under treatment. Many objected strenuously to devices that some authors inject to appeal to children, such as personification, glowing introductory essays that reflect the author's enthusiasm but tell no facts, or the device of having an indulgent and all-wise adult enter into conversation with a child as a means of injecting both a human and an informative quality. Also, it was noted that children would read books representing a wide range of "reading difficulty." If interested in the topic, a reader of eighth-grade ability would dip into a book of fourth-grade difficulty, and a poorer reader would study books that presumably were above his ability; the important consideration was the child's interest in the subject and his ability to get the general flow of ideas from the context and the pictures, even if he failed to understand a large number of individual words.

In this study, adults were also asked to rate the books that the children had used and commented on. First, they were told to rate them in terms of their own reactions, on a scale ranging from most liked to least liked; then they were asked to rate the same books in terms of their judgment as to how well the *children* would like them. The interesting finding was that there was more correspondence between *adults' preferences* and children's preferences than between *adults' judgment* as to what the children would like and what the children actually did like. Broadly speaking, it would appear that one good guide for adults to follow

in selecting books for a child, assuming that they are choosing from a general area that appeals to the child and show some regard for his reading ability, is to select books which they themselves find most interesting.

RADIO INTERESTS

The average child of school age spends many hours a week in listening to radio programs. In some studies, the estimate runs as high as two or more hours per day, but the time varies with different children and in different localities.¹ In one study, it was found that children of high intelligence in a private school spent only about half as much time at the radio as did less privileged children in the same city (42). There are radios in about ninety per cent of American homes, and in many there are several radios. Apart from home listening, many children also listen to radio programs at school.

In the case of certain types of radio programs, there are definite age trends in children's interests and differences between the preferences of boys and girls. Many programs, however, have a high degree of popularity with children differing in age, sex, socioeconomic status, and intelligence. The radio provides for many children an effortless form of make-believe. Table XXXV briefly identifies the twenty programs that were mentioned most often when children reported the programs they "listened to" during three successive surveys. In these surveys, the children were simply asked to write down or report orally the programs they had listened to recently; they were not aided by check lists or other forms of prompting. In the same surveys, other items of information, not represented in Table XXXV, were obtained, including a report of the three programs each child liked best. As it happened, the various programs ranked about the same when a count was made of the number of children who listened to them and of the number who named them as best liked, but there were some

¹ For reports of findings in this field and reviews of other studies, see Tyler (85), Jersild (45), Clark (14, 15), and Eisenberg (22).

TABLE XXXV

THE TWENTY RADIO PROGRAMS REPORTED AS "LISTENED TO" MOST FREQUENTLY BY CHILDREN IN THE METROPOLITAN NEW YORK AREA IN 1935, 1936, AND 1937, INCLUDING COMPARISONS BETWEEN BOYS AND GIRLS, AND, IN THE 1935 RESULTS, COMPARISONS BETWEEN CHILDREN AGED 6 TO 8 AND 10 TO 12 YEARS¹

(Values show where each program ranked in frequency of mention as compared with all other programs that were named. Programs designed primarily for children (juvenile) and for adults are so labelled. Absence of a value for a program at a given season means either that the program was not on the air at the time or that it received a rank below 60.)

Radio Programs	Fall 1936				Spring 1936			Fall 1937		
	Boys and Girls 6 to 14 years	Boys and Girls 6 to 8 years	Boys and Girls 10 to 12 years	All Boys	All Girls	All Boys and Girls 6 to 14 years	All Boys	Boys and Girls in Grades IV to VI	All Boys	All Girls
Number of Children.....	1,344	355	649	726	618	1,059	497	562	341	374
Program Identification:										
Adventures of a boy and company, cowboy setting, but varied locale; considerable humor and horse-play (juvenile).....	1	3	1	2	1	4	3½	4	4	6
Interplanetary adventures in a future setting; rocket ships; etc. (juvenile)	2	2	2	1	3	3	5	3	25	29
Comic-strip detective hero (juvenile)	3	1	3	3	2	2	1	2	3	2
"Western" drama of an earlier generation (juvenile).....	4	9	4	4	6½	5	3½	5	2	3½
Adult comedian; songs; jokes; variety (adult).....	5	7½	5	5½	4½	1	2	1	1	1
Melodramatic adventures of a high-school boy and company (juvenile)	6	7½	6	5½	8½	9	7	13	7	15
Adult comedian; relatively subtle humor, variety (adult).....	7	16	10	7	6½	14	15½	16	6	3½
Melodramatic adventures of a girl and company (juvenile).....	8	5	8	13	4½	12	21	10	19	9

CHILDREN'S INTERESTS

TABLE XXXV (Continued)

Radio Programs	Fall 1936				Spring 1936			Fall 1937		
	Boys and Girls 6 to 14 years	Boys and Girls 6 to 8 years	Boys and Girls 10 to 12 years	All Boys	All Boys and Girls 6 to 14 years	All Boys	All Girls	Boys and Girls in Grades IV to VI	All Boys	All Girls
	1,344	355	649	726	618	497	562	715	341	374
Number of Children.....	9	14	7	10	8½	17	18	30	29	31½
Mystery and crime (adult).....										
Comic-opera strong man, with music; phantasy in contemporary setting (juvenile and adult).....	10	6	11	10	11	22	23	7	5	13
Homely drama of two black-faced characters (adult).....	11	11	12	12	11	19	19	19	18	22½
Melodramatic adventure and crook-thwarting by a juvenile character and company (juvenile).....	12	18	9	10	15	23	30	59	47½	72
Adult male and female comedy team (adult).....	13	12	13	15	11	10	7	8	12	8
Adventures of a boy and company in prehistoric times (juvenile).....	14	17	14	8	28	38	66	....	....	....
Drama of two women characters and company (adult).....	15	13	16	19	13	27	15	....	....	....
Amateur hour (adult).....	16	23½	17	16	16	15½	14	17	21	14
Crime and crime detection (adult).....	17	32	15	14	21½	24	36½	....	....	....
Chit-chat, story and song for young folk (juvenile).....	18	4	25	17	17	28	21	24	26½	18½
Everyday and unusual adventures of two everyday children, and company (juvenile).....	19	19	18	19	18½	11	8	11	16½	7
Amateur hour of juvenile performers (juvenile).....	20	15	19	29	14	43	17	21	41	12

TABLE XXXV (Continued)

Radio Programs	Fall 1936				Spring 1936			Fall 1937		
	Boys and Girls 6 to 14 years	Boys and Girls 6 to 8 years	Boys and Girls 10 to 12 years	All Boys	All Boys	All Girls, 6 to 14 years	All Girls	Boys and Girls in Grades IV to VI	All Boys	All Girls
	1,344	355	649	726	618	1,959	497	562	341	374
Number of Children.....	23	21	24	22	23	6	6	6	47½	43½
Other Programs Among the top 20 in the spring of 1936:	44	20	47½	41½	37½	7	8	9	....	....
Adventure involving mystery, magic and villainy (juvenile).....	24	32	23	21	25	11	9	12	8½	5
Adventures of two boys and company (juvenile).....	22	32	20	35	18½	15	23	11	23	10
Comedian and cast (adult).....	....	....	....	....	....	18	10	29	10	22½
Weekly dramatized stage or screen play (adult).....	39	25½	47½	33½	45	19	13	22	16½	27½
Canadian Mounted Police adventures (juvenile).....	....	....	....	....	....	....	....	....	....	....
Dramatizations (adult).....	....	....	....	....	....	....	....	....	....	....
Other Programs Among the top 20 in the fall of 1937:	....	....	....	....	....	....	....	....	....	....
Adult funny man (juvenile and adult).....	21	27½	21	16	30½	42	30	61½	13	11
Cowboy and Western serial (juvenile).....	....	....	....	....	....	....	....	....	8½	18½
Crime and detective (juvenile).....	....	....	....	....	....	....	....	....	11	17
News dramatization (juvenile).....	....	....	....	....	....	21	14	25	14	25½

¹ From Jersild, A. T.: Children's Interests in Radio Programs, unpublished (New York: Teachers College, Columbia University, 1937). Reproduced by permission.

notable exceptions. For example, a popular program that recently has been put on the air would be likely to have a higher rank when a count was made of the programs children liked best than when a count was made of all programs they listened to; an "old" program had a better chance of being recalled and mentioned by a large number of children, even if they were not especially fond of it.

As indicated in Table XXXV, there were several programs that ranked among the top twenty in all three of the successive surveys. No survey of this sort is definitive, however, for the popularity of programs varies from time to time (later, less extensive surveys show a new crop of popular programs). Popularity depends also upon the particular programs that happen to be available in a given locality, the extent to which two or more popular programs compete with each other at the same period, shifts in the radio schedule, and other similar factors. More recent surveys show a larger proportion of adult programs among children's favorites, partly by reason of the fact that there has been some decline in the number of "blood-and-thunder" children's programs in recent years.

Sex and Age Differences. Some programs are very popular with children of ages six to fourteen, while other programs show an upward or downward trend depending on the children's ages. One survey showed, for example, a steady increase with age in the popularity of a certain dramatized news broadcast. The program was not even mentioned at the six-year level; it ranked about fortieth at ten years and was among the twenty most popular programs at fourteen years. There is a somewhat similarly rising trend with age in the popularity of historical dramas, of "quality" dramatizations of stage or screen plays, and of dramatizations of inventions, industrial developments, and the like. On the other hand, among programs that decline in popularity as children grow older are dramatizations of fairy tales and programs of a frankly make-believe sort (one such program declined from third place in popularity at the age of six to twenty-fifth place at ten and fifty-

fourth place at fourteen); there was also a decline with age in the popularity of programs involving chitchat and brief stories and songs, and of programs dealing with the antics of everyday children (as distinguished from melodramatic juvenile adventures). Certain adult comedians who supply a relatively broad type of humor, supplemented by "funny" noises or slapstick, have a strong appeal at all age levels, while comedians whose humor is of a more subtle variety rank relatively low at the early age levels and then gain in popularity with advancing age. One such program moved from no mention at six years to a rank of fifteen at ten years and a rank of seven at fourteen years. Dance music and romantic serials gain an increasing audience in the teens, and there is a rising trend with age in the popularity of sports broadcasts, quiz programs, general news broadcasts, and programs dealing with hobbies. A program that deals realistically with the activities and foibles of genuine children is likely to appeal more to younger children and to adults than to children in the intermediate range.

In general, boys show a higher preference than do girls for programs involving crime and violence, but some such programs also stand high in favor with girls. Girls show a higher preference than do boys for domestic drama, "crooners" and movie stars, and for programs in which a girl or child characters play a prominent role. Both boys and girls, however, tend to prefer a cast of characters that includes older children or adults, rather than child characters only.

Although trends such as the foregoing may be noted, no final conclusions concerning the appeal of various types of programs can be drawn from the preferences shown by children at any given time. The appeal of a program of a given type depends to a large extent on the ingenuity of the script writer and the skill that goes into the production of the show. It has amply been shown that a fairly well-produced melodramatic serial of the cops-and-robbers, blood-and-thunder variety, involving impossible situations and a good deal of distortion of realities, can attract a large child audience. It requires more ingenuity and skill in writing and produc-

tion to win a similar audience for a more authentic type of dramatization. Surveys of children's interests at any given time do not reveal to what extent these interests have been determined by their past radio fare and by the taste of older children and adults or to what extent such interests could be modified if radio offerings were substantially changed.

Some children, when they first begin to listen to the radio, tend to regard the action and the characters as real (10, 47). This is not a universal phenomenon, however. A child may regard the characters in one program as real after he has come to regard characters in other programs as fictional, and most children at a relatively early age acquire a detached point of view. Some youngsters will even speak slightly of the predicament in which a radio hero finds himself, as, for example: "Of course, the shark won't get him, because he has to be back for the broadcast tomorrow." The extent to which children look upon a radio drama as real and the ways in which they learn to distinguish fiction from reality have not been studied systematically.

The effect that radio programs may have on children's fears and dreams has been touched upon in earlier chapters. Many children exhibit anxiety while listening to an exciting program, and many report that programs have influenced their fears and dreams. When such fears are reported, they sometimes are related quite specifically to radio programs; but sometimes the radio may have had only an incidental influence on fears and anxieties that spring primarily from other factors in the child's life. When children are asked specifically whether they have ever been frightened by a radio program, a large percentage will answer that they have; when they are asked simply to tell about their fears and unpleasant dreams, radio programs likewise will be mentioned but by a smaller number of children, and then only as one of a large number of varied influences that contribute to fear.

Adult Reactions to Children's Radio Interests. In homes of relatively high socio-economic or educational status, and to a lesser extent in the case of homes of average or less priv-

ileged status, there frequently is a good deal of discrepancy between the radio tastes of children and their parents, just as there sometimes was a clash between children and parents of an earlier generation on the subject of the dime novel; the programs children like best are the ones parents dislike most (13, 22, 60). When children in large numbers prefer programs that adults deplore, it cannot forthwith be determined who is right and who is wrong. There may be right and wrong on both sides. On the one hand, adults are prone to judge a program in terms of their own adult prejudices and interests, and fail to take account of the child's point of view. A program that seems inane to an erudite adult may still be suitable for a child, just as a child's pants may fit him well even though they don't fit his father. There is another aspect to this, however: the fact that a child is interested in a program does not necessarily mean that the program fills a "need." Moreover, the critical adult has grounds for complaint, not against the child but against the broadcaster, if a children's program simply takes advantage of a child's lack of knowledge and discrimination and plies him with distortions and humbug, when a more competent script writer and dramatist, working in the same field, might meet the child on his own ground with a more genuine treatment.

Practical Considerations. A child's interest in vicarious excitement often leads him to prefer programs that his elders dislike. Again, some allowances may properly be made for the child's viewpoint and interests. In seeking vicarious excitement and thrills, children are not, of course, showing a form of behavior that has been brought about by the radio. They seek similar thrills in much of their reading, and for generations before the radio was born, children have found vicarious adventure in their own make-believe. Frequently adults, in judging a program they themselves do not happen to enjoy, will deplore its excitement and suspense, even though the child can take it in its stride and show no harmful effects. In this matter, again, however, the program maker has an obvious responsibility, for the fact that children enjoy exciting happenings does not justify him in supplying ma-

terials that are overexciting to many children or in preying on children's fears. As a practical matter, this problem of overexcitement seldom comes alone, for if a program depends for its effectiveness on terrifying suspense, it usually has other questionable features. The better the underlying quality of the program and the more ably its characters are drawn and the more competently it deals with dramatic situations, the less need there is for trying to inflame the child in order to hold his interest.

The underlying quality of the radio program likewise is the important consideration in dealing with another feature on which parents and children sometimes are at odds, namely, children's interest in stories that involve conflict. An easy way to meet this interest is to ply the child with radio programs dealing with crime. Although a child does not acquire a motive for committing crime himself simply from hearing about crime, it is difficult to justify a children's serial that deals primarily with crime. The plea might be made that a program should acquaint children with both the good and the bad in their environment, or it might be argued that emphasis on the detection and punishment of criminals helps to put a child on his guard and to teach him good citizenship. As against this, it may be said that at no time has it been demonstrated that the best way to teach virtue is to emphasize vice or to advertise the techniques of crime and tacitly to convey the impression that the way to be a hero or to get a thrill is either to chase a crook or to be one. In a well-written radio drama for children, conflict and opposition will enter into the story just as will other issues and themes, but it would be difficult to find grounds for endorsing the usual melodramatic "crime formula," with its many distortions, in a day-to-day program for children.

As suggested above, one principle in the handling of radio, as far as the child's elders are concerned, is to take account of the child's situation, rather than to judge things solely in terms of adult tastes. This means, among other things, that a program will not be condemned out of hand. Frequently an adult's opinion of a program for which he has taken an offhand dislike is changed

when he takes time to listen to it a few times, and, by the same process, he may reach an unfavorable opinion of a program that had made a superficially favorable impression. (In passing, it may also be noted that such acquaintanceship will be of value if the parent wishes to take steps to help promote the broadcasting of good programs. It has often been noticed that adults will join in general resolutions and protests without having taken the trouble to acquaint themselves with the programs against which resolutions are being aimed, with the result that indictments are directed alike against sinners and saints among radio offerings.) At the broadcasting end, anyone who presumes to take children's time obviously has a responsibility to offer worth-while entertainment, rather than simply to seek the most banal way of exploiting children's interests.

More pressing, oftentimes, than the problem as to whether the child should listen to this or that program is the problem as to how much of a child's time the radio should take, regardless of what he may be listening to. When a child tunes in to the extent of two or more hours per day, he is giving more than a third as much time to the radio as he spends at school. (Many children, of course, do other things while the radio is operating.) Since a child, very much like an adult, usually approaches the radio at home as a passive auditor who wants to be entertained, rather than as an active learner or student, the radio cannot serve as a substitute for systematic reading and organized study. Moreover, at times the radio may interfere with outdoor exercise (although many children seem to take care of this pretty well, for as soon as the longer days of spring and summer arrive, large numbers leave the radio for outdoor play). The problem of the total time budget cannot be solved by rule of thumb but must be judged in terms of the situation of the individual child.

Even more pressing at times than the question as to the total amount of time to be spent at the radio is the problem as to when the listening should take place without causing too much inconvenience to other members of the household, disrupting the sched-

ule of meals, bedtime, and other daily routines. Frequently the radio causes friction and irritation on this score. The practical fact, of course, is that radio, like all other modern conveniences and appliances, to some extent complicates the everyday management of children (and adults) and that, regardless of the quality of what is broadcast, it requires some regimentation and the exercise of a certain amount of courtesy and mutual give-and-take, just as do other features of modern life.¹

MOTION-PICTURE INTERESTS

Motion pictures occupy an important place in the leisure-time activities of children, but largely for practical reasons they usually take less of a child's time than do radio programs. Children's attendance at the movies varies in different localities and with different children, so no precise estimate of the amount of time devoted to the movies by the average child can be made. In a study by Dale (18), conducted in Ohio, it was found that approximately 36.7 per cent of movie-goers were minors; three per cent of all admissions were children below seven years, twelve per cent were children aged seven to thirteen years, and twenty-two per cent were persons aged fourteen to twenty. At the age range from five to eight years, the average child attended the movies about once every two weeks, but about twenty-two per cent of children never attended; from eight to nineteen years, the average attendance was about once per week, and about twenty per cent of the children in this age range attended the movies two or more times per week.

Children's movie interests roughly parallel their reading and radio interests, as described earlier in this section, although there are exceptions;² for example, "comedy" seems to figure more in movie than in reading interests (unless comic strips are so classed).

¹ For a discussion of some of the practical aspects of the management of radio programs, see Gruenberg (33), Washburne, Milligan, Gruenberg, et al (89), and Jersild (43, 46).

² For accounts of children's movie interests, see Holy (37), Jones and Conrad (52), and Miller (66).

Reports of movie interests at any given time must be taken with a good deal of reservation, just as is the case with radio programs, for the choices depend to a large degree upon what happens to have been available recently and upon the tastes that have been cultivated by the kind of fare offered in the past. A child's vote for a bizarre "Western thriller" does not mean, for example, that he might not be quite as interested in a more authentic film. In a study by Dale (17), several thousand children were asked to name books or stories they would like to see in motion pictures. A large proportion of the votes were cast for books judged by adults to be acceptable or of high quality as literature for children, as distinguished from books that most teachers or librarians would rate as trash.

Concerning the development of critical standards in evaluating motion pictures there is relatively little information. In a study of a limited number of children, Blumer (4) noted some changes with age: at the fourth-grade level, children tended to be quite frank in expressing their enthusiasm for certain serial "thrillers"; at the sixth-grade level, children admitted interest but showed awareness of "childish" characteristics in flimsy films; and at the eighth-grade level, there were expressions of frank disapproval.

As in the case of radio programs, a large proportion of films that children see are not specifically designed for children and many are not highly regarded by educated adult critics. A report by Holy (37) illustrates this; of the movies seen by children in one city, thirty per cent were judged by a reviewing committee to be of poor quality, twenty-nine per cent to be of good quality, and the rest to be of average quality. To be sure, in judging what is proper fare for children, educated adults will be influenced to a large extent by their own tastes, and they may tend to disparage harmless interests that they themselves have outgrown. In the case of motion pictures, as in the case of radio programs, there are, however, broad distinctions—on which most reasonable persons would agree—between productions that appeal to certain interests with a hodgepodge of impossible situations and productions that

appeal to the same interests in a more artistic and authentic way.

A study by Holaday and Stoddard (36) deals with the impressions retained by children after seeing a motion picture. Objective tests were administered to children the day after they had attended a given movie, and such tests were administered at later periods to matched groups who also had seen the movies involved in the experiment. Children in Grades II and III answered an average of fifty-two per cent of the items correctly on the first test, and children who were tested three months after having seen a given movie answered forty-eight per cent of the items correctly; the corresponding percentages for Grades V and VI were sixty-six and fifty-six, and for Grades IX and X eighty-one and sixty-five. Apart from leaving impressions concerning the plot and action, a movie may influence children's attitudes (70) and ideas concerning customs, dress, manners, and morals (4).

The influence that motion pictures may have on children's fears and dreams has been discussed in an earlier chapter. When children are asked outright whether they ever have been frightened by what they hear or see, most of them will answer in the affirmative (21). When asked to tell about their fears, without the use of any leading questions, many children will likewise describe fears relating to motion pictures; but fears thus attributed to the movies will constitute a relatively small, though still quite impressive, proportion of all the fears described. At times, a motion picture will cause such excitement as to produce fear, nightmares, and sleeplessness in a child who otherwise seems to be calm and well adjusted; in other instances, the motion picture may precipitate and give an image and a focus to fears that arise out of other tensions and disturbances in the child's life.¹

Studies of the educational uses of motion pictures indicate that, under proper management, such pictures may help to inject vitality and interest into a topic, stimulate children's imagination,

¹ Some of the studies mentioned above belong to a series conducted under the auspices of the Payne Fund. Other studies in this series are listed in the bibliography (5, 11, 73). The results in these studies have been discussed by Adler (1). For a succinct, practical discussion of the topic of motion pictures, see Stoddard (80).

and help them to grasp concepts concerning abstract or remote conditions.¹

INTERESTS AND INCENTIVES AS RELATED TO LEARNING

It is axiomatic that a child learns best when what he undertakes is tied in with his own purposes, when he recognizes at least some of the meanings and goals involved and finds himself absorbed in the process of learning, rather than simply in the end point of mastering a particular problem. To be sure, in the case both of children and adults, a vast amount of learning takes place apart from consciously formulated goals; again, a child may learn from a project that strikes an adult as of little significance to the youngster, whereas a project designed by the teacher as especially meaningful may not strike the child in that light. Furthermore, both children and adults learn to adjust to a good deal of regimentation and countless regulations (in everyday home routines; in conforming to time schedules at home and school; in observing countless customs concerning dress, privacy, traffic regulations, and so forth) pretty much as a matter of course, without stopping to inquire into the underlying purposes or reasons. This, of course, is fortunate; for if adults stopped to explain or if children tried to formulate the significance and purpose of all the everyday habits and adjustments they must acquire, they would soon find themselves in a sorry plight. In other words, a thoroughgoing application of the rule that a child's learnings should consciously be integrated with his own immediate interests and purposes would soon defeat its own purpose. But even though this is true, there still is much room for applying this rule in the child's education.

As noted above, a primary consideration in helping children to utilize and cultivate their interests is to take account of their abilities, to scale the program of opportunities and requirements to their growing capacities. Another important consideration noted

¹ For a review of studies dealing with educational uses of motion pictures and many practical suggestions as to selection and procedure, see Dale, Dunn, Hoban, and Schneider (19).

above is that interests thrive on successful endeavor. This principle, in turn, has many implications. One implication is that, in *teaching* children, it is important to be ready to *learn from* those who are being taught, so that there may be a degree of give-and-take and adjustment by the teacher to the child's concerns and problems. In the case of very young children, the teacher is perforce a learner; in early training in control of elimination, for example, the parent must meet the child more than half way in taking account of the child's natural rhythms. As children grow older and learn to understand and conform to directions, they are better able to adjust to arbitrary directions; but at all age levels, learning is likely to proceed best if there is mutual participation by the teacher and the learner.

Such participation by the teacher, among other things, helps him to adjust the project to the child's ability or lack of ability and to proceed by means of a graded approach. Other things being equal, a child's interest is most likely to flourish if a project is so scaled that he can enjoy some measure of success right at the beginning. From the start of a learning project, success and knowledge of achievement are valuable incentives. The teacher, while thus participating in the learner's problem, will also better be able to make effective use of other incentives and aids. It has been found, for example, that judicious praise usually is more effective than reproof.¹ It likewise has been noted in experimental studies, as is known from everyday practice, that a suggestion or a bit of help at a strategic juncture may decidedly expedite a child's progress and help him to detect errors and to achieve techniques and insights that would require needless expenditure of time if he were left to explore for himself.²

In the everyday affairs of home and school, the information gleaned through informal observation, collaboration and conversation with children will, of course, give more information concern-

¹ For studies on the subject of praise and reproof and of success and failure as incentives, see Chase (12), Anderson and Smith (2), Hurlock (41), Lorge (61, 62, 63), and Thorndike (82, 83, 84).

² See, for example, Goodenough and Brian (29).

ing ways in which children's interests may be exercised and cultivated than will be gained from check lists, questionnaires, and other formal techniques. An interesting illustration of an informal approach to the understanding of children's own preoccupations as related to subjects taught at school is provided in a study by Wahlstrom (88). The third-grade children in this study talked to teachers concerning their own everyday experiences involving arithmetical computations. It was found that over sixty per cent of the problems reported by the children dealt with the use of money, primarily in connection with purchases. Of the problems that were analyzed, about half involved addition, about two fifths subtraction, only about a tenth multiplication, and only about two per cent division.¹

One area, among many, in which an endeavor to gauge the child's own abilities and interests would be helpful is in music and art. A child's first artistic ventures occur as spontaneous features of his play and general activity,² but as time passes, most children lose this spontaneity. This shift toward greater self-consciousness and conventionality in artistic expression is no doubt due in large measure to formal requirements at school and to the pressure of conventions and customs in everyday life. A part of the shift, however, seems to arise from within the child himself; for, as a child gains in ability to draw or dance or sing, he also becomes more able to look critically upon his own performance and, because of increasing awareness of limitations in his technique, he may become self-conscious and embarrassed about activities that he undertook quite spontaneously at an earlier time. Much of this awareness of limitations in technique, however, stems in turn from the standards to which the child is asked to conform. Not only does the child come to realize the discrepancy between his conception and his execution, but he is further reminded of his

¹ For other studies in this field, see Brueckner (9), Reid (72), Brownell (8), Gross-nickle (32), and Harap and Barrett (34).

² Sequences in the early development of children's drawings and block building have been noted briefly in an earlier chapter. The changing characteristics of children's interests and performances in the graphic arts have been described by Meier (65).

shortcomings by the example set by a fortunate classmate who happens to have a special knack. His interest is especially likely to wane if he falls into the hands of a teacher who feels it to be his duty to convert his pupils into professional artists, along conventional lines, and who sets "art" off as something apart from the countless workaday projects of everyday life.

In the field of music, likewise, a child's potential abilities and interests often bog down in time under the weight of stereotyped requirements. As noted in an earlier chapter, children at an early age can be led to make considerable improvement in their singing and, at the same time, acquire a corresponding increase in interest and enjoyment. However, the conventional requirements go hard with many children. The tremendous resources for enjoyment that reside in the use of the voice are realized by only a small proportion of individuals. One difficulty, among others, seems to be that the course of study frequently is planned more in terms of the preoccupations of finished musicians than in terms of the developing abilities of children. In a study by Kwalwasser (54), it was found that musical concepts and skills recommended in a course of study that had the endorsement of authorities in musical education were far out of line with what the children actually learned to accomplish during the time allotted to musical instruction at school. Another factor that makes for difficulty for many children as well as adults is that they are called upon to sing in a higher key than seems to be congenial to their voices (witness the contortions and strains exhibited by a large proportion of a gathering when singing the national anthem or Christmas carols). Even in the case of preschool children, it has been observed that children are able to sing lower tones than those recommended in musical manuals (48). In a study of children at the elementary- and high-school levels, Sherman found that a large number of children prefer lower tones (79). Children were asked to sing each of five songs in three different keys. The medium key assignment was the one in which the song was published; the high and low keys were established by transposing the song a minor

third above and a minor third below the medium key. Thirty-nine per cent of the boys, and thirty-one per cent of the girls preferred the low key. In the case of boys and girls, the low key received a higher vote than the high key at each age level from seven to seventeen years; and at five yearly levels, the low key received a higher vote from the boys than did the key in which the songs were published.¹

Teacher-Child Relationships as a Factor in Learning. Even if we had complete knowledge in the abstract concerning children's actual or potential interests, we still would not be able forthwith to apply this knowledge in a systematic and uniform way in teaching situations. As pointed out earlier in this chapter, children's responses to a project are likely to be influenced to a large degree by the conduct of the adults who happen to be working with them. The influence of the adult will be exerted, not simply by way of the adult's enthusiasm or resourcefulness in a given project, but by varying characteristics that go to make up what we call his "personality" and his manner of dealing with other persons.

No general formulation of the "personality" qualifications of a good teacher can be made, for each individual personality is unique; nor can personality be analyzed in piecemeal fashion, for the effect of any characteristic that might be studied in isolation will be influenced by the larger constellation of traits of which it is a part. Thus a teacher who uses many "negative" approaches, such as scolding and fault-finding, may, by reason of other qualities—such as a good sense of humor or a genuine interest in the child and his problems—stand higher in the favor of children and promote learning more effectively than a colorless teacher who uses many "positive" approaches in a perfunctory way. However, it is possible to obtain from pupils some information as to the features in a teacher's make-up and methods that strike the attention of pupils. Table XXXVI is based on a classification of replies given by a number of pupils who, during interviews or in

¹ For a review of studies dealing with the development of musical abilities, and with factors in musical training, see Mursell (67) and Jersild (44).

TABLE XXXVI

CHARACTERISTICS MENTIONED BY CHILDREN IN DESCRIPTIONS OF TEACHERS WHOM THEY "LIKED BEST" AND "LIKED LEAST"¹

(Values show the percentage of children naming each characteristic.)

Teachers "Liked Best"					Teachers "Liked Least"				
Age ^a	5-8	9-12	13-17		Age	5-8	9-12	13-17	
Grade	1-3	4-6	7-12		Grade	1-3	4-6	7-12	
Number of Children	25	203	298		Number of Children	9	99	265	
I. Human Qualities as a Person:					I. Human Qualities as a Person:				
1. Kind, sympathetic, considerate	16	24	16		1. Unkind, unsympathetic, ridiculous	11	9	16	
2. Interested in, liked, and adjusted to pupils as persons	0	1	16		2. Lacking in interest, needs, etc. of pupils as persons	0	1	2	
3. Natural, approachable, companionable, good sport	0	3	8		3. Not natural, unapproachable, prim, self-important, not good sport	0	2	7.3	
4. Vivacious, cheerful, smiling	8	3	9		4. Never smiled, sour, glum, solemn	11	0	4	
5. Sense of humor, joked, funny	4	1	5		5. No sense of humor	0	0	0	
6. Good-tempered (not bad-tempered, cranky, etc.)	4	7	2		6. Cross, ill-tempered, cranky	11	19	18	
7. Dignified, not "fresh" or common	4	0	.03		7. Tactless, "fresh"	0	4	3	
					8. Nervous, jittery, fussy	0	1	1	
					9. Flighty, silly	0	0	1	
					10. Emotionally unbalanced, "queer," "talked to self"	0	0	2	
					11. Dishonest, "sneaky," told lies	0	0	0	
II. Physical Appearance, Grooming, Voice:					II. Physical Appearance, Grooming, Voice:				
1. Attractive, good-looking, pretty eyes, nice figure, etc.	0	6	5		1. Unattractive of feature, face, figure, "ugly face," etc.	0	3	2	
2. Nice voice, nice manner of talking	0	2	2		2. Unpleasant voice, too loud, rasping, too low	0	4	4	
3. Attractive clothes, well-groomed, neat, clean	0	3	2		3. Unattractive clothes and grooming, "sloppy" clothes, unattractive hair	11	2	3	
4. Youthful, not elderly	0	.05	1		4. Elderly—poor health	0	4	2.3	
					5. Unpleasant mannerisms	0	0	1	

Teachers "Liked Least"		Teachers "Liked Best"	
III. Characteristics as a Disciplinarian or Class Director:		III. Characteristics as Disciplinarian or Class Director:	
1. Fair, just.....	4	1. Unfair, unjust, punished all for error of one, <i>etc.</i>	13
2. Impartial, no favorites or pets.....	0	2. Partial, had pets.....	10
3. Discipline effective, respected, consistent	4	3. Discipline rigid, too strict, inconsistent, poor.....	26
4. Didn't scold, yell, holler, shout.....	12	4. Constant scold, yells at you.....	56
5. Did not use corporal punishment.....	4	5. Used corporal punishment.....	15
6. Did not treat ignorance as moral wrong..	0	6. Treated failure to learn as moral wrong, impatient with error.....	1
7. Lenient, easygoing, let us have own way	4	7. Too lenient.....	2
8. Did not require hard work or "too much work".....	16	8. Preachy, bossy, domineering.....	1
		9. Never praises.....	4
		9. Participation in Children's Interests; Entertainment, <i>etc.</i>	0
		1. Did not join in children's games, hobbies, interests.....	2
IV. Participation in Activities; Providing Gifts, Entertainment:			1
1. Joins in or permits games and play, tells stories, <i>etc.</i>	32		
2. Special attentions: parties, food, trips, hobbies.....	8	V. Performance as Teacher, Teaching:	
		1. Uninteresting, uninspired, dull, boring..	0
V. Performance as Teacher, Teaching:		2. Uninteresting assignments, cut and dried, never do interesting things.....	0
1. Interesting, resourceful, enthusiastic as teacher.....	4	3. Not a good instructor, didn't know much, not clear, <i>etc.</i>	9
2. Supplied interesting school projects, activities, experiments, <i>etc.</i>	24	4. No help to individual pupils in lessons..	3
3. Taught, explained, well.....	8	5. No judgment as to assignments.....	0
4. Helped individual pupils with lessons..	4	6. Allowed no expression of opinion, choice	0
5. Permitted expression of opinion, voice in class affairs.....	0	7. Standards too high in lessons.....	1
		8. Indoctrinated pupils with own beliefs...	0
		9. Used unwise forms of motivation.....	0
		10. Too much homework.....	14
VI. Miscellaneous and General:		VI. Miscellaneous and General:	
1. Miscellaneous: he's a man; intelligent, room tidy, <i>etc.</i>	0	1. He's a man, she's a woman; not intelligent, room untidy, poor order, because of subject.....	3
2. (Egocentric) She liked me, praised me, gave me prize, <i>etc.</i>	20	2. She disliked me, gave me bad report....	7
3. Indefinite, general, no specific reason....	12	3. No reason given—Indefinite.....	0

^a The "age" entries represent ages of children for whom no grades were indicated; the main classification was according to grade.

¹ From Jersild, A. T., and Holmes, F. B.: "Characteristics of Teachers Who Are 'Liked Best' and 'Disliked Most,'" unpublished (New York: Teachers College, Columbia University, 1939). Reproduced by permission.

written compositions, described the teachers whom they liked best and those whom they liked least or disliked most. The categories used in the classification grew out of the children's own replies, although some of them are phrased in adult terms to conserve space in the table. (Separate results for boys and girls, revealing many similarities but some differences, are not reproduced in the table.) It will be noted that a large percentage of the replies deal with the teacher's qualities and characteristics as a human being, as one who has to be "lived with" during a large part of the day, rather than with qualities related specifically to the learning of this or that subject. The older children, however, seem to attach more importance than do the younger ones to the teacher's qualities as a pedagogue, to his ability to explain, make things clear, and help the pupil in the mastery of school subjects.

Results such as those shown in Table XXXVI obviously deal only with limited aspects of the complex factors involved in relationships between pupils and their teachers. As emphasized in an earlier section, the effect on the child of a given adult characteristic or practice depends largely upon the total setting in which it appears.¹

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CHAPTER XV

THE GROWTH AND PREDICTION OF INTELLIGENCE

This chapter deals with the development of mental abilities as measured by intelligence tests. In perhaps no branch of psychology has more progress been made than in the measurement of mental ability. This holds true even though the instruments for measuring intelligence, especially at the lower age levels, are still imperfect and many issues remain unsettled, including the issue as to what constitutes general intelligence.

The intelligence test is designed to measure an individual's ability to cope with practical situations that call for the exercise of mental processes, his ability to act in accordance with the demands of the situation that confronts him, to comprehend the situation and solve the problems it involves, to learn, to apply past learnings, and to perform acts that are useful in meeting the practical situation at hand. Numerous definitions have been made of intelligence, including varying emphasis upon the ability to learn, to apply past learnings, to carry on abstract thinking. Among the operations listed by Thorndike (81) under the heading of intelligence are "a wide variety of operations such as we may call attention, retention, recall, recognition, selective and relational thinking, abstraction, generalization, organization, inductive and deductive reasoning, together with learning and knowledge in general." Other things being equal, according to Thorndike, the more intelligent person is one who not only can master a *greater number* of tasks or solve problems with greater *speed* but also is able to perform *harder* tasks, such as solving a mathematical problem which a lesser intellect never could master or reaching an

effective solution to an economic problem that would bewilder a less able person who had as much good will and had access to all the pertinent information.

The usual intelligence test includes a number of concrete tasks, calculated to represent or serve as a sample of functions or operations that are essential to the effective performance of tasks calling for mental operation in everyday life, and is so devised as to yield a total score. In tests of children, an important consideration is to select items suited and scaled to children's capacity for response at various levels of growth. Thus a young child may be asked to fit sample blocks of various shapes into holes of the same shape in a board, to repeat numbers that are spoken to him, to name objects or identify pictures of objects, and so forth. Items used with older children may include tests of vocabulary, ability to solve problems of various kinds, immediate memory, speed of learning, ability to understand and interpret the meanings of written passages, to make deductions or inductions from observed facts, and so forth.

The Stanford-Binet Scale. A discussion of the characteristics and the methods of scoring involved in the wide variety of mental tests designed for various age levels would go beyond the scope of this chapter, but a number of considerations that enter into the testing of children can be illustrated by one test which has been widely used, an instrument originated by Binet and subsequently revised and perfected by Terman (76). This scale consists of many tests that are graded in difficulty from the age of two and upward and can be scored as passed or failed.¹ There are six test items at each half-yearly level from two years through four years, and six tests at each yearly age level thereafter (up through age fourteen, after which follow tests for the "average adult" and "superior adult" levels). The test items at any given age level

¹This statement refers to the 1937 revision. An earlier revision, more widely known, included tests from the age of three and upward, with six tests at each age level.

represent tasks that the normal child of that age has been able to perform successfully. Accordingly, a child's score on the test indicates his status as compared with other children.

A child's performance on the scale can be scored in terms of *mental age*. Thus, if he passes all the tests up to and including the third year and fails all tests beyond that point, he has a mental age of three years. If he succeeds on tests beyond the three-year level, he receives credit for each such success. Each of the twelve tests at the two-, three-, and four-year levels counts as one month of mental age; and each of the six tests at later yearly levels counts as two months of mental age. Thus, if a child passes all tests up to and including three years, plus four of the twelve tests at four years, he is credited with a mental age of three years, four months, which means that his mentality is equal to that of the average child at three years and four months.

Intelligence Quotient. To obtain an index of the child's brightness, it is necessary to consider his mental age in relation to his chronological age. A common procedure is to divide a child's mental age by his chronological age and multiply the result by 100 to yield a value known as the *intelligence quotient*. Thus a normal or average three-year-old child will have a mental age of three, a chronological age of three, and an I.Q. of 100. If the same child earns a mental age score of four years, his I.Q. is 133; if he does no better than the normal two-year-old, his I.Q. is only 67. As can be seen, the I.Q. provides a convenient means of comparing the brightness of children at different age levels.

Other Types of Intelligence Tests. The test described above is administered to one child at a time. Other tests that have been widely used with older children and adults can be administered to several persons in a group. There are, in fact, many forms of tests and varying methods of scoring. Some tests depend entirely upon spoken or written answers; others do not call for verbal answers, but the person who is being tested gives his answer by way of some performance—such as completing a picture or design, solving mazes and puzzles, fitting geometrical forms together, or

answering by pantomime. In general the younger the child, the larger will be the proportion of items that call for an overt performance such as pointing, fitting things together, or carrying out directions, although verbal items such as asking the child to give the names of objects that are on display or asking him to repeat words or numbers read by the examiner as a test of immediate memory occur in tests at the lower preschool range.

Tests of Infants and Preschool Children. Intelligence scales designed for children below the age of three have been developed more recently and are less reliable than tests for older children, but much work has been done in this field in recent years. Indeed, scales have been devised for appraising the child's developmental status practically from the time of birth. As can well be understood, many difficulties beset mental testing at the level of infancy, before a child has learned to talk and to understand spoken language, as well as all the other symbols, gestures, and facial expressions that come into play in a verbal interchange between two persons. Moreover, it is more difficult than will be the case later to segregate the more strictly mental from the motor, social, and even emotional forms of response. The young child's response is also likely to be more variable, especially when he is on the brink of a new accomplishment, for during the period when an achievement is being consolidated, a child may exhibit it at one time and then for a while revert to his earlier behavior. During early infancy, likewise, performance is likely to vary more according to the child's degree of sleepiness or wakefulness, hunger, and satiety than will be the case later on, when daily rhythms have been more firmly established and conform more to the routines of older persons. Furthermore, the adequacy of an examination depends much upon the ingenuity of the examiner and upon the degree of rapport and coöperation which the examiner can establish, for the younger the child is, of course, the less understanding he has of the meaning or importance of making a good showing, and the results of the test can be considered as valid only if the child has coöperated and has done his best in the test situation.

TABLE XXXVII

MENTAL DEVELOPMENT TEST ITEMS DURING THE FIRST THREE YEARS¹

Name of Test	Age Placement Value	Name of Test	Age Placement Value
1. Postural adjustment when lifted.....	.5	50. Reaches persistently.....	6.05
2. Lateral head movements, prone.....	.6	51. Turns after spoon.....	6.1
3. Momentary regard of ring..	.6	52. Mirror-image approach....	6.1
4. Responds to sound.....	.6	53. Picks cube deftly.....	6.2
5. Prolonged regard of ring..	1.2	54. Several syllables.....	6.3
6. Horizontal eye coördination	1.2	55. Bangs in play.....	6.35
7. Responds to voice.....	1.3	56. Sustained inspection of ring	6.4
8. Arm and leg thrusts in play	1.3	57. Unilateral reaching.....	6.45
9. Vertical eye coördination..	1.4	58. Vocalizes satisfaction.....	6.5
10. Circular eye coördination..	1.45	59. Lifts cup by handle.....	6.6
11. Social smile.....	1.45	60. Exploitive string play.....	6.7
12. Vocalizations.....	1.55	61. Rotates wrist.....	6.7
13. Turns eyes to light.....	1.9	62. Scoops pellet.....	6.8
14. Free inspection.....	2.2	63. Smiles at image.....	7.2
15. Eyes follow pencil.....	2.3	64. Interest in bell details....	7.2
16. Anticipatory excitement...	2.4	65. Looks for spoon.....	7.25
17. Manipulates ring.....	2.9	66. Frolic play.....	7.3
18. Reaches for ring.....	3.0	67. Pulls string; secures ring..	7.35
19. Blinks at shadow.....	3.1	68. Vocal recognition.....	7.4
20. Vocalizes to social stimulus	3.1	69. Sound production, interest.	7.6
21. Fingers hand in play.....	3.2	70. Complete thumb opposition	7.65
22. Reacts to paper on face....	3.2	71. Partial finger prehension..	7.8
23. Carries ring to mouth.....	3.3	72. Retains two or three cubes	8.0
24. Aware of strange situation.	3.3	73. Vocalizes interjections....	8.1
25. Follows vanishing object..	3.35	74. Attends scribbling.....	8.1
26. Anticipatory adjustment to lifting.....	3.4	75. Cooperates in games.....	8.45
27. Regards cube.....	3.45	76. Exploits formboard and block.....	8.5
28. Play with rattle.....	3.5	77. Listens to familiar words..	8.5
29. Manipulates table edge....	3.6	78. Says "da-da" or equivalent	8.55
30. Inspects hand.....	3.65	79. Explores formboard holes..	8.6
31. Closes on dangling ring....	3.95	80. Attempt to secure three cubes.....	8.7
32. Turns to sound.....	4.0	81. Interest in throwing.....	8.9
33. Beginning thumb opposition	4.1	82. Fine prehension.....	9.3
34. Active table manipulation..	4.4	83. Pulls string adaptively....	9.5
35. Reaches for cube.....	4.5	84. Uses handle; secures cube..	9.6
36. Eye coöperation in reaching	4.8	85. Play to mirror.....	9.7
37. Partial thumb opposition..	5.1	86. Differentiates words.....	9.8
38. Picks up cube.....	5.2	87. Rings bell purposively....	9.9
39. Retains two cubes.....	5.3	88. Puts cube in cup.....	10.4
40. Regards pellet.....	5.35	89. Scribble imitation attempt.	10.4
41. Recovers rattle.....	5.35	90. Unwraps cube.....	10.6
42. Discriminates strangers....	5.55	91. Holds crayon adaptively...	11.2
43. Vocalizes eagerness.....	5.6	92. Inhibits on command.....	11.5
44. Simultaneous flexion and thumb opposition.....	5.75	93. Repeats: laughed at.....	11.6
45. Lifts cup.....	5.8	94. Strikes doll imitatively....	11.6
46. Paper play.....	5.8	95. Imitates words.....	11.7
47. Accepts second cube.....	5.85	96. Spoon imitation.....	12.1
48. Vocalizes pleasure.....	5.9	97. Holds cup to drink.....	12.2
49. Vocalizes displeasure.....	5.95	98. Adjusts round block.....	12.6
		99. Says two words.....	12.9
		100. Dangles ring by string....	13.1

¹ Adapted from Bayley, N.: *Mental Growth During the First Three Years*, Genetic Psychology Monographs, (1933), Vol. XIV, No. 1, p. 26-30. Reproduced by permission. In addition to age-placement values, in months, the original table also shows the score value of each item.

TABLE XXXVII (Continued)

Name of Test		Age Placement Value	Name of Test		Age Placement Value
101.	Spontaneous scribble.....	13.2	144.	Imitates strokes, vertical and horizontal.....	24.9
102.	Expressive jargon.....	13.5	145.	Understands two preposi- tions.....	25.0
103.	Tower of two cubes.....	13.5	146.	Points to seven pictures...	25.1
104.	Places one peg repeatedly..	13.7	147.	Builds tower of eight cubes	25.3
105.	One block in Bayley board.	15.1	148.	Selects "big" object.....	25.4
106.	Round block in Gesell board, reversed.....	15.2	149.	Memory: one object.....	26.5
107.	Looks at pictures.....	15.5	150.	Bayley board in 60 seconds.	26.6
108.	Throws a ball.....	15.8	151.	Places pegs in 22 seconds...	27.4
109.	Tower of three cubes.....	16.3	152.	Four-form card, two correct	27.5
110.	Turns pages.....	16.6	153.	Understands three preposi- tions.....	28.0
111.	Square or triangle in Gesell board.....	16.8	154.	Form card, one correct....	28.0
112.	Places pegs in 70 seconds..	17.2	155.	Builds three-cube pyramid..	28.1
113.	Two round blocks in Bayley board.....	17.2	156.	Points to "tiny" square....	28.3
114.	Names one object.....	17.4	157.	Picture completions, one correct.....	28.4
115.	Puts cover on box.....	17.5	158.	Form completions, one cor- rect.....	29.8
116.	Places pegs in 42 seconds..	17.5	159.	Imitates + second trial....	29.9
117.	Mends broken doll.....	17.7	160.	Memory: two objects.....	29.9
118.	Imitates a stroke.....	17.8	161.	Bayley board in 45 seconds.	30.1
119.	Finds one object.....	18.1	162.	Picture completions, two..	30.4
120.	Places pegs in 38 seconds..	18.2	163.	Four-form card, four.....	30.6
121.	Names one picture.....	18.7	164.	Buttons, one button.....	31.1
122.	Differentiates scribble and stroke.....	18.9	165.	Form card, two.....	31.5
123.	Names Gesell watch, fifth picture.....	19.4	166.	Action agent, two.....	31.9
124.	Names two objects.....	19.6	167.	Picture description: adje- ctive or verb.....	32.0
125.	Names Gesell watch, fourth picture.....	19.6	168.	Imitates + first trial.....	32.4
126.	Discriminates cup and plate	19.8	169.	Names seven pictures (com- posite).....	32.9
127.	Turns doorknob.....	20.0	170.	Form completions, two....	33.1
128.	Square or triangle in Gesell board, reversed.....	20.1	171.	Action agent, five.....	33.3
129.	Bayley board, also two squares.....	20.2	172.	Form card, four.....	33.6
130.	Finds two objects.....	20.4	173.	Builds pink tower in 75 sec- onds.....	33.8
131.	All three blocks in reversed board.....	20.6	174.	Knows five prepositions....	33.9
132.	Points to three pictures...	20.7	175.	Builds pink tower in 40 sec- onds.....	34.1
133.	Places pegs in 30 seconds...	21.0	176.	Builds pink tower in 28 sec- onds.....	34.5
134.	Discriminates cup, plate, box.....	21.1	177.	Copies one circle, three triangles.....	34.6
135.	Names three pictures.....	21.2	178.	Discriminates long line....	34.7
136.	Builds tower of six cubes...	21.3	179.	Action agent, nine.....	34.9
137.	Names three objects.....	21.5	180.	Form card, seven.....	35.1
138.	Differentiates tower and pyramid.....	22.0	181.	Remembers one out of four pictures.....	35.6
139.	Completes Bayley board in 150 minutes.....	22.8	182.	Two buttons in 75 seconds.	36.6
140.	Points to five pictures.....	23.1	183.	Action agent, twelve.....	37.0
141.	Bayley board in 90 seconds.	24.3	184.	Form completions, four....	37.3
142.	Names five pictures.....	24.4	185.	Picture discrimination, uses preposition or pronoun..	37.8
143.	Names Gesell watch, second picture.....	24.5			

Early Developmental Norms. Partly by reason of the difficulty of obtaining a measurement of more or less strictly "mental" performances in early infancy, the scales applied to infants are usually not referred to as "intelligence tests" but as measurements of developmental age, or mental growth, or maturity level, without the restricted label of "intelligence."

Items from an inventory of early mental growth are shown in Table XXXVII, which is based upon a three-year study by Bayley of infants who were selected to provide, as far as possible, a representative sampling of the population at large, and who were first seen within three days after birth and examined systematically during the ensuing weeks and months. The study began with sixty-one infants; by the end of the third year, a few had dropped out because of illness, removal to other localities, and for other reason. Some of the items are self-explanatory; others are not. The reader should consult Bayley's monograph for a full description of the tests and the scoring procedures.

Studies by Gesell have provided the most complete and detailed inventories of developments during infancy (21, 22, 23). Gesell's summaries show characteristic items of behavior that may be expected in the normal child at various levels from the first month to fifty-six weeks. At the early levels, the normative summaries include items of postural control, locomotion, response to sights and sounds, prehension, language, and social behavior; at later levels, manipulative, adaptive, and language responses become increasingly prominent.

Mental growth proceeds rapidly during infancy and early years. However, since a child's progress consists not simply in greater efficiency in doing what he has done before but in an increase in the number, scope, and variety of his performances, it is not possible to compute the rate of increase in precise, quantitative terms, as can be done in measurements of a child's height or weight from month to month or year to year.

Predictive Value of Infant Tests. Infant tests, in their present form, do not give a very accurate prediction of what a child's future intelligence is likely to be. Generally speaking, the younger the child at the time when he is tested, the smaller will be the predictive value of his score as an indication of the child's

probable I.Q. in later years, although even in early infancy a markedly subnormal or a markedly superior rating may have significance for the future.

A child's ratings on *consecutive* tests are likely to show a good deal of resemblance, but the longer the interval between two tests, the lower the resemblance is likely to be. Thus, if an examination of the child at four months shows that he is well above average (has advanced beyond the achievements of a normal child of four months, and is showing performances that normally do not appear until later), the likelihood is that on examinations at five or six months he again will be above average, but prediction as to whether he will exceed the average to a corresponding extent at fifteen or twenty-four months is little more than guess-work. Bayley found, for example, a positive correlation¹ of .57

¹ To illustrate what is meant by a correlation coefficient two examples are given below. One example shows the correlation between I.Q. ratings based on two separate tests; the other, the correlation between I.Q. and strength of grip. In these examples, one of the simplest methods of correlation, known as the "rank-difference method," is used. It can be applied when there are only a small number of cases. The examples below include only seven cases, a number which is large enough for illustrative purposes but too small for ordinary statistical work.

The rank difference correlation coefficient is expressed by the symbol ρ . The formula used in the present case is:

$$\rho = 1 - \frac{6 \times \text{sum of } D^2}{n(n^2 - 1)}$$

The illustrations show that the subjects' scores must first be ranked. D represents the difference between the same subject's rank in the two tests; N , the number of cases.

Individuals Tested	I.Q. Test I		I.Q. Test II		D	D ²	I.Q. Test I Rank		Strength of Grip Rank		D	D ²
	Rank		Rank									
Albert.....	80	7	79	7	0	0	7	22	6	1	1	
Henry.....	90	6	95	4	2	4	6	28	3	3	9	
John.....	104	3	110	3	0	0	3	20	7	4	16	
Peter.....	95	5	92	6	1	1	5	30	2	3	9	
Palmer.....	140	1	135	1	0	0	1	26	4	3	9	
Robert.....	120	2	125	2	0	0	2	34	1	1	1	
Walter.....	100	4	94	5	1	1	4	24	5	1	1	

$$N = 7$$
$$N^2 - 1 = 48$$
$$N(N^2 - 1) = 336$$

$$\text{Sum of } D^2 = 6$$
$$6 \times \text{sum of } D^2 = 36$$

$$\rho = 1 - \frac{6 \times \text{sum of } D^2}{N(N^2 - 1)}$$
$$= 1 - 36/336$$
$$= +.89 \text{ (between the first and second test of I.Q.)}$$

$$\text{Sum of } D^2 = 46$$
$$6 \times \text{sum of } D^2 = 276$$

$$\rho = 1 - 276/336$$
$$= +.18 \text{ (between the first test of I.Q. and scores on strength of grip)}$$

between average (sigma) scores at one to three months and at four to six months, and a correlation of .42 between scores at one to three and seven to nine months. As the interval increased, the correlation decreased, so that there was practically a zero correlation between scores at one to three months and scores beyond the age of twelve months. There was, however, a tendency for the scores to become more stable as the children grew older; thus, average scores at thirteen to fifteen months showed a correlation of .70 with a child's average ratings at eighteen to twenty-four months, and a correlation of .54 with average ratings at twenty-seven, thirty and thirty-six months.

TABLE XXXVIII

COMPOSITE OF TEST-RETEST CORRELATIONS FROM SEVERAL STUDIES OF INFANT AND PRESCHOOL GROUPS¹

Age at Earlier Test	Interval Between Test and Retest							
	Less than 4 months	4 to 9 months	10 to 15 months	16 to 21 months	22 to 29 months	30 to 41 months	42 to 53 months	Over 53 months
Under 4 months.....	.57	.33	.10	-.03	-.09			
4-9 months.....	.77	.53	.49	.23	.16	.46	.00	
10-15 months.....	.78	.66	.50	.45	.33			.55
16-21 months.....	.76	.68	.51	.44	.38	.41	.25	.33
22-29 months.....	.82	.74	.68					.43
30-41 months.....	.87	.68	.66	.49	.57	.57	.56	.66
42-53 months.....	.81	.65	.72	.71	.66	.63	.63	.41
54-65 months.....			.76		.73			

Many factors contribute to this lack of consistency: different rates of growth, irregularities in rate of growth, changes in ad-

According to the examples given, there is a high degree of correspondence between the children's I.Q.'s on Tests I and II. Each child maintains about the same rank on both tests. If each child kept exactly the same rank on both tests, there would be a perfect correlation of +1.00. If there were no consistency at all between scores on the first and second tests, the correlation would be 0. If there were a complete reversal of ranks, the correlation would be -1.00. For practical purposes, we would be able to make a fairly accurate estimate of what a child's rating on Test I would be if we knew his relative standing on Test II. In the second example, we find a positive but low correlation between I.Q. and strength of grip. On the basis of the figures in this example, there is a likelihood that a child with a high I.Q. will also tend to be above rather than below average in strength of grip. But the correspondence is so small that, if we tried to estimate his score in one test on the basis of our knowledge of his score on the other, our estimate would be little more than a guess.

¹ From Thorndike, R. L.: "Constancy of the I.Q.," *Psychological Bulletin* (1940), 37, p. 173. Reproduced by permission of the American Psychological Association.

justment to the test situation, and the possibility that the test measures different functions, maturing at different rates, at different age levels. Bayley points out that "intelligent behavior observable in infants" differs from "adult behavior which we call intelligent," and to the extent that this is true, a test applied to an infant does not measure and predict the intelligence of the same individual when older.

Bayley found that differences between children became greater with advancing age and also that, with increasing age, there was a greater spread in the performance of individual children on a given examination (as when a child of eighteen months performs at a level several months beyond that on some parts of the scale and no better than the average child at a much younger age level on other parts). It was also noted that there was a positive relation between children's scores and the education of the children's parents after about the age of two years, but not before that time. The findings also suggest that, to appraise an infant's progress during early years, a series of tests from which can be determined the speed or rate of his growth over a period of time gives a much more significant indication of his probable standing in the future than does a measurement simply of his position as compared with other children on one particular test.

Consistency and Predictive Value of Intelligence Ratings at the Preschool Level. Beyond the age of two, there is a good deal more resemblance between intelligence-test scores from month to month and from year to year than is the case in measurements of mental growth at an earlier age. Even so, however, a child's score at the age of three or four does not give a very accurate prophecy of what the child's I.Q. will be at the age of six or seven and thereafter. The score may fluctuate considerably, up or down. But if the tests have been properly administered and if no unusual changes in circumstances have intervened, the chances are that, in the average case, a child's I.Q. at six or seven years will remain within the general neighborhood of his I.Q. as determined at the age of three or four. If there is a change, it is

more likely that he will move, say, from an "average" to a "superior" classification, or the reverse, than from an "average" to a "very superior" classification, or the reverse; it is still less likely that he will move from an "average" to a "genius" or a "feeble-minded" rating, although shifts ranging as large as forty points or more have been found.

Several groups of children in one investigation (Driscoll, 15) were tested first between the ages of two and four years, on two scales designed for preschool children (the Kuhlmann-Binet and the Merrill-Palmer scales), and then, in later years, on the Stanford-Binet scale. There was a correlation of .66 between I.Q.'s of children tested between the ages of two and three on the Kuhlmann-Binet scale and the children's I.Q.'s when tested at the age of five on the Stanford-Binet scale. A slightly higher correlation (.71) was found between ratings on tests between the ages of three and four and tests given after the age of five. The corresponding correlations between ratings on the other preschool test (the Merrill-Palmer) and those on the Stanford-Binet test after the age of five were .61 and .41.

At the preschool level, as at the infancy level, the general finding has been that the longer the interval between testings, the smaller becomes the correspondence between scores made by the same child at one period as compared with another. The same holds true, but to a lesser extent, at the school-age level.¹

Factors Influencing Test Results in Early Childhood. The findings reviewed above and in Table XXXIX show that the intelligence quotient as determined by standardized tests during infancy and preschool years, while showing a much higher degree of constancy than could be expected by chance, does not give as reliable a forecast of a child's intelligence some years later as do

¹For a discussion of the correlations between tests and retests as related to the interval of time between the tests, see R. L. Thorndike (83). Table XXXIX gives a summary, adapted from Anderson and based upon three studies, one by Honzik (40) of children who were tested periodically for several years from the age of two and onward and separate studies of older children by Hirsch (33) and by Dearborn, Rothney, and Shuttleworth (14).

TABLE XXXIX

CORRELATIONS BETWEEN INTELLIGENCE RATINGS OF THE SAME CHILDREN AT VARIOUS AGE LEVELS, INCLUDING CORRELATIONS BETWEEN SCORES ON INITIAL TESTS AND TESTS DURING LATER YEARS, AND CORRELATIONS BETWEEN TERMINAL TESTS AND TESTS DURING EARLIER YEARS¹

Correlations with Initial Status

<i>With 1.9 years</i>		<i>With 7 years</i>			<i>With 6-8 years</i>	
<i>Age</i>		<i>Age</i>	<i>Boys</i>	<i>Girls</i>	<i>Age</i>	
2 yrs.	.68	8 yrs.	.735	.651	7-9 yrs.	.868
3 yrs.	.47	9 yrs.	.697	.604	8-10 yrs.	.824
4 yrs.	.46	10 yrs.	.726	.719	9-11 yrs.	.787
5 yrs.	.32	11 yrs.	.670	.668	10-12 yrs.	.839
6 yrs.	.30	12 yrs.	.642	.655	11-13 yrs.	.800

Correlations with Terminal Status

<i>With 7 years</i>		<i>With 16 years</i>			<i>With 11-13 years</i>	
<i>Age</i>		<i>Age</i>	<i>Boys</i>	<i>Girls</i>	<i>Age</i>	
2 yrs.	.46	11 yrs.	.752	.728	6-8 yrs.	.800
3 yrs.	.56	12 yrs.	.790	.776	7-9 yrs.	.770
4 yrs.	.66	13 yrs.	.778	.812	8-10 yrs.	.773
5 yrs.	.73	14 yrs.	.829	.822	9-11 yrs.	.828
6 yrs.	.81	15 yrs.	.901	.906	10-12 yrs.	.902

tests applied at the school-age level or later. Why is this? Is the child actually more changeable and are his abilities, as compared with other children of his own age, less constant during the earlier years, or is it possibly the fault of the tests that are used and the way in which they are administered? A definitive answer to this question cannot be supplied, but many pertinent observations can be offered. On theoretical grounds, one might reasonably expect that there would be less constancy in rate of mental growth during earlier years. The child is progressing rapidly; new abilities are emerging and are being consolidated. A slight temporary ac-

¹ Adapted from Anderson, J. E.: "The Limitations of Infant and Preschool Tests in the Measurement of Intelligence," *Journal of Psychology* (1939), 8: 351-379. Reproduced by permission. For a full description, see Anderson's article. The tables reported by Anderson consist in part of reproductions of tabular materials from the underlying studies, in part of new computations based upon individual scores reported in the underlying studies.

celeration or retardation may produce temporary upward or downward swings in the intelligence quotient. The child of six or seven years also is still maturing quite rapidly, to be sure, but the farther along a child is in the process of maturing, the more his improvement takes on the form of greater power, sagacity, and scope in the use of capacities that can be remeasured from time to time, as distinguished from the emergence of relatively new abilities. The development of language serves as an example. Although language development is a continuous process, the change that takes place over a period of a few months during early childhood (from the period before the "first word" and the first use of sentences) is more striking and might have a more variable effect on an estimate of a child's ability than the changes that normally take place over a similar period of months after the age of six. One child may speak his "first words" quite early and then add new words to his vocabulary at a relatively slow rate; another, whose language development shows a somewhat different pattern, may begin to talk later, but then advance rapidly and catch up with the child who started to talk at an earlier time. To the extent that language facility enters into tests of these children, the first child would score higher on an earlier test but not on a later test; the shift in the relative standing of the two children would be due to somewhat different patterns of development and could not be attributed to errors in the tests.

It is possible that an intensive and detailed study of the mental growth of younger children would show that even under optimum conditions there would be more irregularity in individual growth curves at the earlier ages than at later ages.

However, the lower predictive value of tests at the preschool than at the school-age level cannot be attributed entirely to irregularities in the growth pattern or to imperfections in the measuring instruments as such. As in infancy, so to a lesser but still very important degree at the preschool level, the reliability of test results depends upon the tester's success in winning the child's full coöperation and in enlisting the child's best effort. Resistance or

fear on the child's part may interfere with the test. Even if there is no resistance or fear, the young child may fail to make a serious effort to do his best. To many young children, a mental-test situation and its demands are quite different from anything which they meet in their everyday lives. Among other things, the child may quite fail to recognize the importance of doing things according to the letter of the tester's instructions; thus it has been observed, for example, that a child who some time ago may have mastered a certain form board (putting blocks of different shapes into holes of the same shape) in his everyday play and who has lost interest in the performance may fail on a task of this sort in the testing situation. Again, a child who has learned to conform to directions and routines in a nursery-school situation may have an advantage, when tested on the nursery-school grounds by a familiar person, over a child who is new to this situation.

Effects of Resistance and Adjustment to the Test Situation. A careful study by Rust (67) shows how a child's resistance may affect his score, even when the test is administered by a person who is experienced and highly competent as a mental tester.¹

On the initial presentation of one of the two scales, seventy-five per cent of the children resisted one or more items of the Kuhlmann-Binet scale; but on a later presentation, ninety-six per cent of the children accepted every test. Sixty-eight per cent of the children initially refused one or more items of the other scale, but after subsequent presentations, all but one child accepted all the tests. *Fifty-eight per cent* of the initially refused items were later successfully answered when presented to the children again within a few days, and this without coaching or help.

Of the children who initially refused and finally accepted every test item of the Kuhlman-Binet scale, seven per cent made gains of from twenty-five to thirty-five points of I.Q.; eighteen per cent made gains ranging from fifteen to twenty-four points; twenty-six per cent made gains ranging from five to fourteen points;

¹ The procedure in this study is described in an earlier section dealing with resistance as an aspect of social behavior (p. 172).

and fourteen per cent of the children made gains of from one to four points. On the Merrill-Palmer scale (which required more "performance" and less verbal response than did the Kuhlmann-Binet), the gains were not as numerous or as large.

Rust's findings show impressively the extent to which a child's coöperation in the test situation may influence his score. By virtue of two or three added opportunities for becoming acquainted and for establishing rapport, and the chance therewith provided for attempting test items that previously were refused, some children gained as much as from twenty-five to thirty-five points. Obviously, the child's I.Q. had not expanded by thirty-five points during the two to four days involved in the experiment. Equally obviously, a difference quite as great or even greater might appear if the same child had been tested at intervals separated by one or several years and on one occasion had coöperated perfectly while on another had shown a good deal of resistance. Large variations might also occur by virtue of differences in the extent to which different examiners are able to elicit his best effort.

That the child's adjustment to the environment in which the test is given may influence the consistency of his scores is shown in a study by Updegraff (86), in which children in one group were tested during the week preceding the opening of the fall term of the nursery school, and children in another group were tested after they had attended the school not less than two weeks; in the spring, both groups were tested again. There was considerably less correspondence between the fall and spring scores of the children who had their first test before entering school than in the case of children who were first tested after they had attended school at least two weeks. The respective correlations were .535 and .837. In both groups, there were more children whose I.Q.'s increased than children whose I.Q.'s decreased during the school year.

Updegraff points out factors that seem to explain the difference in the consistency of the two groups. Children who were tested before the school term had to face a strange examiner in a strange

place; children who were tested after their entrance into the school, on the other hand, had a previous opportunity to become acquainted with the personnel, the grounds, and the nursery-school environment.

These observations emphasize the degree to which a preschool child's performance on a mental test might be influenced by surrounding circumstances. Any condition which influences a child on one test and not on another is likely to reduce the consistency of ratings at different times. Even if the tests themselves were well constructed, fortuitous factors might affect the results to such an extent that the child's mentality, as compared with that of his peers, would seem to be fluctuating rather than relatively stable. It is true that the intelligence-test score of an older child may likewise be influenced by conditions which surround the examination, but the older child usually has learned many adaptations which enable him to make similar adjustments to a test on different occasions.

Although the intelligence ratings of preschool children, based on tests which have been used most frequently until the present time, are likely to be less trustworthy as a prophecy for the future than the scores of children of school age, it still is apparent from the findings reviewed earlier that there is a substantial correlation between ratings obtained after the age of three years and ratings obtained beyond the age of five.

Constancy of Mental Test Scores Beyond the Preschool Level. As already indicated above, there is a relatively high degree of consistency in intelligence-test ratings from year to year at the school age and beyond. Individuals tend to keep about the same rank or relative position from age to age. As shown in Table XXXIX, the correlations between intelligence-test ratings separated by an interval of one or more years, are far from perfect, however.¹ Fluctuations are likely to occur, but if the tests have been well administered and no outstanding changes in the child's circumstances have intervened (such as illness, emotional malad-

¹ For a review of findings concerning the constancy of the I.Q., see Thorndike (82).

justment, or transfer to a quite different environment), the upward or downward shift is likely to be relatively small in a majority of cases.¹

It should be emphasized in passing that, when psychologists speak of the "constancy" of the I.Q., they do not at all imply that the I.Q. will remain precisely the same from year to year; the concept implies, rather, that there is a high degree of probability (not certainty) that fluctuations will be relatively small in a majority of cases. Indeed, because of the variables involved in measuring the complex operations that are involved in "intelligence," it is improbable that a child would obtain precisely the same score on two equivalent forms of the same test, even if they were administered on successive days. In discussing results obtained with the best known of all individual tests for children (the Stanford-Binet Scale), Terman (75) several years ago, pointed out that the chances were one in two that the I.Q. might increase as much as six points or decrease as much as four points; the chances of an increase of twelve points or a decrease of eight points were one in five. The chances of shifts larger than twelve points were considerably smaller; but in tests and retests of large numbers of children, it is recognized not only that individual cases may show larger shifts but that such shifts are to be expected. In other words, a child's I.Q. as determined by a test at a given time should not be taken as a final verdict. In discussing this topic, Goodenough (26) points out that when one or more of the modern revisions of the Binet scale are administered under standard conditions and by competent examiners, it can be expected that fifty per cent of elementary-school children will not change their standing by more than five points of I.Q. in either direction, while the remaining fifty per cent will show somewhat greater variation. Goodenough estimates that, in tests of a group of 500 children, under the best conditions of individual testing, at least 100 may be expected, on retests, to show changes in I.Q.

¹ Studies dealing with changes in I.Q. through environmental influences are discussed in a section that follows below.

of as much as ten points; changes of as much as fifteen points may be expected in about twenty-five cases, and four or five cases may shift as much as twenty points. Goodenough points out that even greater fluctuations may be expected if the tests are not administered by workers of equal competence or if comparisons are based upon results of different types of tests.

The theory of the constancy of the I.Q. is sometimes interpreted, by both amateur advocates and amateur critics, as meaning in effect that the I.Q. is fixed, like water in a watertight jug. Errors in practice obviously will occur if a child's I.Q., as determined by a given test, is regarded as a fixed value that can be used once and for all in classifying a pupil or in guiding his work at school. Again, misconceptions of another sort occur when it is concluded, upon discovery of a shift of many points in I.Q. on two different tests, that such shifts completely discredit the theory and practice of mental testing. Actually, those who have played the most responsible role in the development and use of mental tests are the ones who have emphasized variational tendencies, have acknowledged that the instruments are not infallible, and have stressed the fact that, while the I.Q. tends to show a relatively high degree of constancy as measured by standard tests, changes of a few points are likely to occur in a large number of cases, and relatively large changes may be expected in many other instances.

Some Causes of Fluctuation. Apparent changes in I.Q. may arise from factors involved in the test situation. Although tests are designed as far as possible to rule out the effects of practice, it is difficult to do this in a thoroughgoing way. In the case of group tests, for example, a veteran examinee, accustomed to many types of examinations, may have an advantage through knowing what is expected; and if the directions and sample tests are on the same page as the main test, he can begin to study the main questions while the others are still looking at the directions. Again, a child may have an advantage in solving a given type of problem through having pondered over similar problems that were missed at a previous testing. Although previous experience

with tests may thus make a difference, the errors in rating through this factor alone seem to be relatively small by and large, although they may be quite substantial in individual cases.

An incorrect estimate of a child's intelligence may arise if the child, by reason of unique circumstances in his environment, is at a disadvantage on certain test items. Thus a child who lives in a restricted environment and seldom has a chance to use money may fail, less through lack of ability than through lack of opportunity to learn, on a problem that calls for knowledge of the names and values of coins. To the extent that a test involves items that are better suited to the experience of one group than another (as, for example, urban as compared with rural, or isolated mountaineer, or Indian reservation groups), it may yield misleading results (43, 46, 68). Also, if a child moves from a highly restricted to a more stimulating environment, he may exhibit a rise in intelligence, not so much by virtue of a change in his underlying ability, as by virtue of the fact that his ability in dealing with the particular kinds of information and problems involved in a test is now better in line with his potentialities than it was at an earlier time. Furthermore, a child's I.Q. may change from one test to a later one if he is definitely malnourished on the first occasion and has overcome the effects of malnutrition when tested at a later time (63), and fluctuations in I.Q. have also been found to be associated with emotional maladjustment (24). However, a change for the better in a child's physical condition does not invariably produce a change in his score. In a study by Richey (66), children who had diseased tonsils and adenoids when first tested were reexamined after this condition had been remedied. Their initial and final scores were compared with the scores of a group of control children and a group of children whose records indicated that their tonsils and adenoids still needed attention. The children who had been treated for diseased tonsils and adenoids showed a small increase in I.Q. between the two tests, but the differences were not statistically reliable.

Limits of Intellectual Growth. When tests included in intelli-

gence scales—such as tests of memory span, speed of learning, reasoning, and problem solving—are repeated, an increase in ability is usually found from year to year. The question may be raised: “At what age does this “upward extension” or “vertical” increase in intelligence come to an end?” Obviously, it would be impossible to distinguish precisely between changes in theoretical underlying abilities and changes brought about through the use or application of such abilities. The evidence on the question as to when growth has reached its maximum is conflicting. Not only are there differences between individuals with respect to the age at which an increase in capacity appears to taper off, but it also appears that there are differences, within the same individual, in the age at which various intellectual processes reach their maximum development. There likewise is a difference in the pattern of the “growth curve” of different operations.¹

The age at which individuals cease to grow in intellectual ability has been set all the way from thirteen and a half years to some time in the twenties. The increase in ability that occurs after the time when intellectual growth has come to an end presumably consists chiefly in an increase in skill and knowledge—a “horizontal” extension, so to speak—rather than an increase in underlying capacity. The question as to when mental growth reaches its maximum has many practical implications. Among other things, the more variation there is between individuals in the age of continuing intellectual growth, the less adequately will a test administered during childhood serve to give an accurate indication of a person’s intelligence at maturity. If, for example, two children have the same score at fifteen years and one of them tapers off from that time on, showing little growth beyond the age of nineteen, while the other is still on an upward curve at that age, the latter will of course outstrip the former to some extent.

¹ For illustrative “growth curves” of general intelligence and of different operations included in intelligence tests see, for example, Thorndike, *et al.* (81) and Freeman and Flory (19).

The question as to the rate and duration of mental growth during adolescence and beyond is interesting also from the point of view of prognosis of the future abilities of bright and dull children. If, for example, dull children continue their mental growth longer than bright children, they would tend to overcome some of the advantage of the former as they grow older; if the reverse were true, added years would bring an increase in the relative superiority of the bright. On this question, the evidence is also conflicting. In a study which dealt in part with this problem, Freeman and Flory (19) found that children of average ability continued to advance intellectually during the period of later adolescence as rapidly as did the bright children, if not more so, and that they continued to advance to at least as late an age. According to their findings, "children or youth of lesser promise may profit by continued education as much if not more than their precocious and brighter comrades." These findings concern children of about average intelligence as compared with bright children and do not give data concerning distinctly dull children as compared with the bright.

There is some evidence to indicate that distinctly dull persons reach their maximum growth at an earlier age than do average or superior children (94). On the question as to whether children who are bright are likely to show a loss or a gain during a period of years, the evidence is somewhat divided. In re-measurements of gifted children by Burks, Jensen, and Terman (8), there was evidence of some loss in I.Q. as the children grew older, but the gifted children were found to maintain or almost maintain their relative superiority, at least through the period of adolescence. Of course, even if a gifted child should lose several points of I.Q., he would still be ahead of a majority of his fellows. One problem in this connection is that of finding tests which adequately measure the same functions over a period of years. In a study by Cattell (10), children with I.Q.'s of 120 and above showed a gain in I.Q. over an interval of five years or more between the first and final tests. In a study by Hollingworth and Kaunitz (39), chil-

dren who originally showed I.Q.'s of 130 or more were retested after the elapse of ten years at a median age of eighteen and a half years. Eighty-two per cent of the children who were among the top one per cent of the population on the first test were again found to be in the top one per cent when tested ten years later; no individual regressed to normal or nearly to normal.

A later study of the same group of children by Lorge and Hollingworth (52) indicates that children who were found to be superior at the age of seven to nine also retained their status at or near maturity.

In passing, it should be stated that, once an individual has reached what seems to be the upper limits of mental growth, he does not proceed from that point on to show a decline. After a person's capacities have reached their zenith, they continue to function, in the normal case, during the next two decades or longer, without any significant impairment of an individual's capacity for learning or for adjusting to new intellectual problems (80). Although a slight decline between the ages of about thirty to fifty may occur, the loss is not likely to be serious, and it may be more than offset by an individual's greater fund of experience. The falling off, if any, that comes during the years following the twenties is more likely to be due to the fact that the individual becomes more set in his ways and more bound by old habits than to a decline in mental ability. The pattern of mental decline, when it does set in, seems to vary with different individuals. An interesting observation in this connection is that deterioration is likely to be slowest in those operations in which the individual has had the most experience (56).

THE INFLUENCE OF NATURE AND NURTURE ON INDIVIDUAL DIFFERENCES IN MENTAL ABILITY

In the foregoing, we have noted that there are wide differences in the intelligence of children as measured by available tests and that these differences generally tend to remain relatively constant from the school age and onward. To what extent are these

differences due to inborn factors and to what extent are they a product of the environment? This question can be raised as a practical issue, even though no precise distinction can be made between hereditary and environmental factors. Some of the angles from which this problem has been approached are described below.

Resemblances Between Members of the Same Family. Physical evidences of the influence of heredity appear in the obvious fact that animals of a given species beget their own kind and in the resemblances between parents and children in such features as skin color, color and texture of hair, physiognomy, and other physical features. The resemblance may be so great that a child may turn out to be almost the image of one of his parents, to all outward appearances, although such close resemblance, even in anatomical characteristics, is infrequent. Actually, the physical basis of heredity is highly complicated. The general "recipe" for an individual's physical development is present in the fertilized egg in the forms of biochemical substances known as *genes*. These genes do not, however, constitute a preformed mosaic of structural elements that simply multiply and produce an enlarged pattern as the individual grows. Moreover, even if hereditary influences were as simple as a fixed mosaic, they would still be highly complicated, for each individual is "double" with respect to his genes (in the fertilized egg there is one set of genes from each parent). As a result, a person may possess in his germ plasm the basis for characteristics that are not manifest in his make-up but are latent within him and may be transmitted to his offspring. A child may thus inherit a physical characteristic which neither of his parents displays. Even more difficult to trace directly are hereditary influences on complex functional characteristics, especially on anything so complicated as the operations involved in what we call intelligence.

One of many indirect approaches to the study of the influence of heredity on intelligence has been to measure resemblances be-

tween parents and children. In an early study in this field by Pearson (59, 60, 61), parents and children were compared with respect to certain physical characteristics, and the resulting correlations were about .50. About the same correlation was found when parents and children were compared with respect to certain mental characteristics. Pearson concluded that physical and mental characteristics in man are inherited "within broad lines in the same manner and with the same intensity." Subsequent studies, using standardized mental tests, have likewise found a correlation between the intelligence of parents and children. One such study deals with 997 cases in 269 family groups, constituting a cross-section of a New England rural and small-town community, (Conrad and Jones, 11). Mother-son, mother-daughter, father-son, and father-daughter comparisons were made. The parent-child correlations were all closely alike, averaging about .50. Other studies have likewise found correlations ranging in the neighborhood of from .35 to .50. Positive correlations ranging upward to about .50 have likewise been found between the intelligence of siblings who live in the same home environment.¹

Of special interest has been the study of resemblances between twins. Twins have been classified into two groups, the *identical* (also called uniovular and monozygotic) and the *nonidentical* (also called biovular and dizygotic). Identical twins presumably develop from a single fertilized egg and therefore they have the same heredity, while nonidentical twins develop from two separate fertilized eggs and so, as far as original germ plasm is concerned, should correspond to about the same degree as brothers and sisters who are born some time apart. It is difficult to determine precisely whether twins are identical or nonidentical, especially at an early age; but many criteria can be applied in making the judgment, including not simply physical resemblance so close that it is difficult to tell the twins apart, but also the appearance

¹ For other references, see Hildreth (32), Thorndike (79, 81), Pintner (62), and an earlier report by Jones of the above-mentioned study in a New England community (41).

in both of unique physical characteristics which are the same or counterparts of each other.¹ To the extent that heredity counts and uniovularity can be established, one should expect greater intellectual resemblances between identical than between nonidentical twins. Actually, this is what has been found. In several studies, correlations from .80 to .90 have been found between the intelligence of twins who are judged to be identical on the basis of their physical characteristics and who share the same environment; on the other hand, the correlations in the case of twins judged to be nonidentical (including twins of the same sex who definitely are dissimilar in physical appearance and "fraternal" twins—that is, pairs including a boy and a girl) range considerably lower, from about .50 to .70.² High resemblances have also been found between identical twins reared apart, but the findings vary as to the magnitude of this resemblance (34, 54, 57) and large differences between separated identical twins have been observed. It appears however, that the resemblance between separated "identical" twins is likely to be higher than that between ordinary brothers and sisters reared in the same home.

Studies of Foster Children. Since a foster child shares the same environment but not the immediate biological heredity of the family or the group with which he is raised, the resemblances between foster children and foster parents, as compared with resemblances between blood relatives in the same home tell something about the effect of a common environment on the similarities normally found between the latter. In the discussion which follows, two historic studies in this field will be summarized briefly, followed by mention of some later investigations.

In a study by Burks (7), 214 foster and 105 "own" children, as well as members of the families with whom the children lived,

¹ For a discussion of biological aspects of twinning, see early chapters in a volume by Newman, Freeman, and Holzinger (57).

² For studies in this field, see Thorndike (78), Wingfield and Sandiford (95), Hirsch (34), Merriman (55), and Newman, Freeman and Holzinger (57). Carter (9) has reviewed recent studies in this area.

were tested. All of the foster children in the study had been placed in homes before the age of twelve months, the average age at the time of placement being three months. Since (as we have noticed in earlier discussion) it is difficult to estimate a child's intelligence at such an early age, there was less opportunity for parents to select a child who corresponded to their own level of intelligence than would have been the case if the children were older when placed for adoption. Inasmuch as any such selections were made at the start, there would, of course, be a correlation between parents and adopted children quite apart from the effect of the home environment.

Burks obtained measurements not only of intelligence but also of such factors as the education and socio-economic status of the parents, their character, and the hours spent in instructing the child at home. Similar measurements were made of the groups of related parents and children who served as controls. It was found that the correlations between parents and their own children were considerably higher than correlations between children and foster parents, and the findings therefore led to the conclusion that heredity contributes far more to the child's mental status than does environment. Burks places the estimate of the total effect of heredity as high as from seventy-five to eighty per cent.

A higher estimate of the effect of the environment is given by Freeman, Holzinger, and their associates (20) on the basis of measurements of over 600 children. The average age of the children, when placed in the foster homes, was higher than in Burks' study. Ratings were obtained of the intelligence of foster parents and of the material, social, and cultural environments of the foster homes. It was found that children improved in intelligence after being placed in foster homes, the improvements being greatest among children who were placed in the better homes. The correlation between the intelligence of children and that of their foster parents was .37, and correlations between unrelated children reared in the same home ranged from .25 to .37. To estimate

what these figures mean, it is necessary only to bear in mind that if children and adults were paired quite at random, the correlation to be expected would be 0.

Siblings separated before the age of six and reared in different homes showed a correlation of .25, as compared with correlations upward to .50 among siblings reared in the same home. These figures indicate that some resemblance between relatives remains, even though they are separated, and that a common environment does not bring as close a resemblance between nonrelatives as between relatives; but they also suggest that much of the resemblance ordinarily found between relatives is due to environment. Although the authors in this study do not venture to estimate by means of statistical devices just what percentage of influence heredity exerts on a person's intelligence, their correlations indicate that, were such an estimate made, it would be much lower than the estimate given by Burks.

That it is necessary to be cautious in interpreting the resemblance between parents and foster children has been emphasized in findings obtained by Leahy (49). Because of the efforts of placement agencies to "fit the child to the home," a child may resemble his adopted parents, quite apart from any influence which they have had upon him. Leahy correlated such factors as the education and the occupation of foster parents with factors in the family background of the true parents of adopted children. Leahy's figures indicate that, as a result of selective placement, some resemblance between adopted children and their foster parents may be expected, quite apart from any influence of environment and training in their common home.

In a study by Leahy (50), in which care was taken to take account of factors such as selective placement, it was found that the correlation between "own" parents and children ranged considerably higher (clustering around .50) than correlations between foster parents and children (clustering around .20). After weighing factors involved in the original placement of the children, Leahy's estimate of the influence of the home environment is

smaller even than Burk's. Low estimates of the effect of the environment in producing resemblances between unrelated children who are reared together have likewise emerged from a study by Davis (13), who found that orphan children reared together from seven to nine years were not significantly more alike than children who had been together in the same environment only one to three years. In a study by Lawrence (48), it was found that there was a positive relation between the I.Q.'s of institutional orphans, ranging upward to fourteen years, and the socio-economic status of their parents (for example, children whose parents were in the "professional" class tended to have higher intelligence than children of unskilled workers), even though the children and parents had never seen each other.

A higher estimate of the influence of the environment is given in findings reported by Skeels (69) and Skodak (71). Skodak (71) studied foster children whose true parents were low in occupational status; many of them were also very low in educational status, although the median mother had a tenth-grade education, according to such information as could be ascertained. Some children whose true parents definitely appeared to be incompetent and intellectually inferior exhibited I.Q.'s that were well above average. Furthermore, the average child in a group of 154 children who were placed in foster homes in early infancy showed a higher level of development than would be expected on the basis of such information as could be obtained concerning the intellectual status of their parents. The children had an average I.Q. of 116 when tested at an average age of two years and seven months; when tested again at an average age of four years and four months, the average I.Q. was 111.5, while only a small percentage of the true mothers had I.Q.'s above 100. However, by virtue of the procedure used in measuring the intelligence of the mothers (use of the Stanford-Binet scale with a divisor of sixteen years), it is possible that the scores of the mothers represent an underestimate. The findings indicate that the resemblance normally found between parents and children is influenced to a

substantial degree by environmental factors, but the findings also indicate that environmental factors are not solely responsible. Intelligence ratings were available in the case of eighty of the true mothers of the children who were placed in foster homes in early infancy; the correlation between the I.Q.'s of these mothers and the I.Q.'s of their children when first tested was practically 0 (.06), but when the children were tested a second time, it was .24.

As can be seen, the testimony from studies of foster children varies, but certain generalizations can be made. The studies indicate that, in the average case, there will be a considerably higher than chance resemblance between a foster child and his true parents, even though they have lived in different environments since the child's birth. Most of the studies likewise indicate that, in the average case, the environmental factor will have an effect on differences in intelligence. The estimate as to the differential influence of the environment varies, and it tends to be lower in the large-scale studies in which the most careful attention has been paid to selective placement and other factors that might produce a resemblance between children and their foster parents, quite apart from a common home environment. In individual cases, there may be a large discrepancy between the intelligence of a foster child and the intelligence of his true parents; such discrepancies may be quite noticeable if, for example, the foster child lives in an optimum environment while his true parents, by reason of unfavorable circumstances, have lacked the opportunity and stimulus fully to develop and utilize their intellectual abilities. It may also be noted, however, that by reason of complex hereditary and environmental factors, marked differences sometimes also appear in the case of parents and one of their own offspring living in the same home.

The Effect of Preschool Training on Intellectual Development. Several investigations have dealt with the effect of nursery school and kindergarten attendance on the I.Q. By reason of the important educational and social implications of evidence on this

subject, the discussion which follows will deal briefly with a number of studies. The fact that discrepant results have been obtained by different investigators emphasizes some of the problems involved in research in this area.

Goodenough (25), in 1928, reported findings obtained in retests of twenty-eight children who had attended nursery school as compared with a similar number of children who had not attended nursery school; children in the two groups were matched with respect to sex, age, I.Q. on each of two preliminary tests, interval between first and second tests, paternal occupation, education of parents, nativity of parents, interval between the second of the first two tests and the third test that was administered after one group had attended nursery school. Both groups showed average gains between the final and the initial tests. The nursery-school group showed a slightly higher average increase than did the control group, but the difference was not statistically reliable. The two greatest individual gains were made by children in the nonnursery-school group, and the three greatest individual losses were also shown by this group. Hildreth (31) made comparisons between two groups of children at an average age of six years; children in one group had previously attended nursery school or kindergarten for a period of four months or longer, while children in the control group had had no such previous schooling. In both groups, most of the children were above average in intelligence and in socio-economic status. In the case of the former group, no significant differences appeared when comparisons were made between tests administered before and after nursery-school or kindergarten attendance; comparisons between earlier and later tests in the case of the control group likewise showed no significant change. Kavin and Hoefer (44) similarly found no significant difference between gains showed by matched nursery-school and nonnursery-school groups. On the other hand, Barrett and Koch (3) found that substantially larger gains were made by a nursery-school group than by a control group, and Waring (88) found that children made larger gains in I.Q. during intervals while

attending nursery school than during intervals of nonattendance (such as during vacation periods).

In a series of studies directed by Wellman at the University of Iowa, striking results have been obtained in measurements of the effects of nursery-school attendance on the I.Q. Wellman found average gains of about six to eight I.Q. points during the period between the fall and spring tests, an interval of about six months (92). No gains were shown during the vacation period between the spring and fall tests. The children who continued in nursery school during a second and a third academic year continued to show average gains, although later yearly gains were not as large on the average as earlier gains. During an academic year, the children with the longest interval between fall and spring tests tended to show larger gains than those whose tests were administered at shorter intervals, and children who spent a full school day in the nursery school tended to gain more than those who came for shorter daily sessions. While the nursery-school children thus were showing gains, corresponding average gains were not shown on tests of children of similar age and initial ability who did not attend nursery school.

The gains were not shared alike by children of high and low initial ability. Children of average ability gained most; children somewhat above average made gains but not to the same extent; the very bright children gained little or nothing.¹

In a later study by McCandless, reported by Wellman (90), an experiment was performed with six superior four-year-old chil-

¹ When a complex function such as intelligence is tested by means of measurements that are subject to error, it is likely, of course, that there will be some shift in individual scores on a second test, regardless of any actual change in intellectual ability that may have taken place. Moreover, if a change in scores does occur by reason of errors of measurement, the likelihood is greater that those who earned the lowest scores on the first test will score somewhat higher, rather than lower, on the second, and that those who earned the highest scores will show a downward rather than an upward shift. This phenomenon may account, in part, for the fact that the children with the lowest scores in this study made the largest gains. On the same principle, the children who earned the highest scores might be expected to show a loss rather than to hold their own, but as an offset to this, it may be noted that in several studies it has been found that children of preschool age tend to show a gain in average scores on a second test.

dren (I.Q.'s ranging from 125 to 165), who were given "an especially enriched curriculum" in the nursery school. For several months, the children worked on special projects for about an hour a day; they were compared with a control group of children of similar age and initial ability who shared the same nursery-school environment, with the exception of periods of time spent on special projects. Such projects included a trip to a farm, subsequent building and equipping of a miniature farm, various other constructional enterprises, expeditions, stories, and efforts on the teachers' part to answer all questions fully and to make suggestions leading to higher levels of thinking. The special projects did not produce statistically reliable gains, but at the end of the project, the experimental children were found to stand "slightly higher than the control group intellectually."

The children who had made gains during preschool years did not slump as they continued through the University of Iowa elementary and high schools but maintained their advantage (91). As stated by Wellman, the results "indicate that preschool attendance permanently affected mental ability, resulting in higher scores at high school and college levels." Children who entered the University of Iowa schools after the preschool age also made gains over a period of years, but the gains were less striking than those exhibited during preschool years, and such children did not overcome the advantage gained by the children who had attended during preschool years and had continued into the later grades.

In a further study (70), a preschool project was undertaken in a large orphanage. The orphanage children came from poor homes and from parentage that, in the main, would be considered below normal. The orphanage itself provided meager environmental stimulation, offered limited opportunities, involved a good deal of mass treatment of the younger children, and was crowded and understaffed. From the large group of residents, matched experimental and control groups were selected; both groups were kept in the orphanage environment, but for certain hours of the

day, the experimental group attended a nursery school that was established in the institution. (In passing, it, may be mentioned that the usual preschool procedures had to be modified and adapted considerably at the start by virtue of the handicaps of these children as compared with children of the sort who customarily come to nursery school from their own homes. The orphanage children were lacking in their background of routine habits, in imaginativeness and enterprise in using materials, and in other respects, and showed an attitude of distrust that had grown out of their previous habit of shifting for themselves without the reassurance of parental protection; they were notably deficient in language development; their vocabularies, at most ages, being only one fourth to one half the size of those of children of average intelligence at the same age.)

Large changes in intelligence during the course of the experiment were noted in individual cases. Children who attended nursery school during a period of about twenty months showed an average gain of 4.6 points in I.Q.,¹ while the control children during this time showed an average loss of 4.6 points. The direction of the change, especially in comparisons between subgroups, is noteworthy. During the period of the study, children in the higher classifications of intelligence, as compared with the general level of the group as a whole (I.Q. averaging 90 to 99 and 80 to 89), in the control group were heading toward lower levels, but the trend in the preschool group was not so uniform; those who initially were about average tended to remain so, while those at lower levels moved upward. Children of the higher levels who were transferred to foster homes made gains in intelligence following placement, but such children from control groups did not, within the time limits of the later observations, reach the level of children who had attended the nursery school.

Other studies in the Iowa series likewise emphasize the possible effects of environmental conditions. In one study, it was found

¹ As measured by the Kuhlmann or Stanford revisions of the Binet Scale.

that preschool children who moved on to certain elementary schools maintained or continued to increase their I.Q.'s, while other preschool children who went on to certain other schools did not make further gains (89). Another study (72) indicated that three different schools differed in their "mental stimulation value."

The possibility that the mental level of the group with which a child associates may have an important effect on his intellectual growth is indicated by findings in a study of institutional children by Crissey (12). Children of border-line or moron levels tended to hold their own or to make slight gains when in the company of children of normal or dull-normal intelligence; but in the same company, children of normal or superior intelligence showed losses. Again, border-line children showed losses when transferred to a feeble-minded group. According to Wellman, there is "no really satisfactory substitute for association with other children of high ability. Children set goals for themselves in terms of what other children do." (90)¹

Discrepant Findings. The results noted above are arresting and have wide implications. Although mental ability constitutes only one feature of a person's make-up, this feature is important as far as it goes, and profound significance attaches to any evidence which would indicate that the intellectual potentialities of human beings are larger than has been supposed and that the limits set by hereditary influences are wider and more flexible than has usually been assumed. However, numerous questions have been raised concerning the findings reviewed above² and, in several other recent studies, it has been found that

¹ This statement pertaining to the general subject of intellectual growth is borne out more specifically by studies reviewed in Chapter V which indicate the influence a child's associates may have on his language development.

² Problems of methodology and interpretation that arise in studies in this area—including the difficulty of obtaining valid intelligence ratings at the preschool level, problems of sampling and matching, the problem as to whether gains in I.Q. represent a true improvement in intellectual capacity as distinguished from increased skill in dealing with the practical details of the test situation, and the possibility that changes and

nursery-school attendance has no significant effect on the I.Q., especially in the case of children who come from normal or relatively superior homes. Several such studies are presented in Part II of the *Thirty-Ninth Yearbook of the National Society for the Study of Education*. Goodenough and Maurer (29) give a number of comparisons between nursery-school and control groups, including comparisons after one, two, and three years of nursery-school training, as well as comparisons between the initial scores of matched groups and the scores of the same children at the age of six and a half years. Comparisons are shown for the groups as a whole and for subgroups corresponding to the occupations of the children's parents. In none of the comparisons do the children who have had nursery-school experience exhibit significant gains or changes as compared with the nonnursery-school children. The findings indicate, among other things, that the children who were sent to nursery school were superior from the start, on the average, to the general run of children in their occupational groupings; the findings also show that children of both nursery-school and control groups made gains on retestings, but the gains thus exhibited were about the same for the two groups.

In a continuation of a study begun at earlier levels and referred to earlier in this chapter, Bayley (5) found that children among her subjects who attended nursery school did not gain an advantage in their test scores. L. D. Anderson (2) compared matched nursery-school and nonnursery-school children, and found no evidence that nursery-school training had an appreciable or constant effect on mental test scores; comparisons between tests and retests of the experimental and control groups showed highly similar results. In a study by Bird (6), it likewise was found that a year's training in a combination nursery school-kindergarten environment seemed to have a negligible effect on children's intel-

leveling tendencies might represent, in part, the phenomenon of regression toward the mean which frequently appears in remeasurements of a complex function by means of a fallible instrument—have been discussed in a review by McNemar (53), a reply by Wellman, Skeels and Skodak (93), and in articles by Goodenough (26, 27), J. E. Anderson (1), and R. L. Thorndike (82).

ligence test quotients. A group of thirty children in a study by Frandsen and Barlow (18) showed an average gain of 3.34 points in I.Q. after a median period of five and a half months in nursery school, as compared with a gain of .53 for a control group; the difference is appreciable but is described by the investigators as small compared with the large range of individual differences that normally arise from hereditary and environmental causes. Jones and Jorgenson (42) found no significant differences in comparisons between the mental growth curves of fifty-two children who had attended nursery school and various control groups. No significant differences appeared in comparisons between intelligence ratings of a nursery-school and a control group in a study by Lamson (47), although the former did have an advantage in personal adjustments as rated by teachers. The findings in a study by Voas (87) also showed no evidence that nursery-school attendance raises the I.Q.

On the other hand, Starkweather and Roberts (73) found, as did Wellman and her associates, that a number of children who attended nursery schools made gains in intelligence; these gains were inversely related to initial intelligence ratings—that is, children with the lowest initial intelligence quotients (I.Q.'s of 80 to 89) made the largest gains, which thereafter became progressively smaller (a gain of only 1.2 points in the case of children with initial I.Q.'s of from 120 to 139 points), and children with the highest initial ratings (140 to 159) showed a loss; but the number of children represented in this range was only five.¹ Retests of the children after the end of the nursery-school period indicated that the children continued to hold the gains they had made.

Nursery-school children from privileged backgrounds who were included in a study by Olson and Hughes (58) did not differ significantly in their intellectual growth from nonnursery-school children of similar backgrounds; and children who attended nursery school an average of over 200 days did not differ significantly from children who, on the average, had attended only about half

¹ See footnote on page 500.

as many days. The investigators point out that it might be argued that the home nurture of these children was already of such a character that the nursery school could add little to it. They suggest also that different results might possibly be obtained if studies were made of children who suffer from deprivation in the home environment and for whom the nursery school might provide intellectual nurture more in keeping with their potential achievement.

Summary of Studies of the Effects of Preschool Training. Because of the many as yet unsolved problems in connection with the measurement of intelligence, especially at the early age levels, it is not possible at the present time to give a definitive appraisal of the nature-nurture problem in the light of recent studies of pre-school children. It is possible to hazard some generalizations, however. The findings reviewed above represent widely distributed nursery schools that are associated with various universities, colleges, and public-school systems. These findings do not, by and large, warrant any general expectation that a child, from a reasonably good home environment, will be likely to show a significant rise in I.Q. if sent to nursery school (he may, of course, gain in many other ways, as has been shown in studies of the effects of nursery-school experience on children's social adjustments, habits, and skills). Needless to say, the evidence cannot be weighed simply by counting the investigations that show gains as against those that do not. By virtue of differences in educational programs and teacher personnel, it is possible that nursery schools vary in the extent to which they stimulate a child to develop his potentialities, but to obtain conclusive evidence on this point it would be necessary to study children's intellectual reactions in relation to an analysis of the kind of experiences they have at school. It is likewise possible that, even if programs were similar, they might have a different effect on children who enjoy few advantages in their everyday lives than upon children who have many such advantages.

The findings also suggest that, if gains are made, they are more

likely to appear in the case of children of average or below average or slightly above average intelligence than in the case of brighter children. To the extent that such gains occur, they are significant, whether they be attributed to fortuitous factors—such as errors of initial measurement and practice effects—or whether they be interpreted to mean that a more stimulating environment has raised potential achievement to actual achievement or has brought about an increase both in actual and potential ability. Furthermore, findings that show no gains in the intelligence of preschool children who have a high mental test rating when they first come to the new environment and who come from favorable home environments do not, in themselves, negate findings to the effect that children coming from a very unfavorable environment, with initially low intelligence quotients, might show substantial gains. Studies of the latter sort must be considered on their own merit.

Effect of Schooling in I.Q.'s at the Elementary-School Level. As indicated on earlier pages, evidences of changes in I.Q. have not been limited to the preschool level. Children beyond the preschool age are represented in many reports of upward changes in intelligence after their transfer from institutions to foster homes and from one community to another offering better educational opportunities; likewise, one study mentioned above indicates that different schools may vary in the intellectual stimulus they afford.¹ On the latter point, however, it appears that no large changes can be expected simply by sending children, who already have average educational opportunities to relatively superior elementary schools or by transferring children from regular classes in a reasonably good school system to special "opportunity" classes. Pritchard, Horan, and Hollingworth (64) report a study of 111 children of below average intelligence and socio-economic

¹In the general literature, there are many reports of wide changes in intelligence of individual children studied under special circumstances. A study by Lithauer and Klineberg (51) showed an average gain of about six points of I.Q. in the case of selected children who were first tested while in an orphanage and again later, after they had been for some time in foster homes.

status who were transferred from their regular classrooms in the New York public-school system to special classes in a school that was designed to provide an optimal educational environment.¹ The curriculum for the slow-learning group was elastic; the work centered around units of work selected by pupils and teachers. There was extensive use of trips to museums, motion pictures, and other visual devices. The children had the use of class libraries and a large college library, and were guided in their use of these by teachers and librarians. Many of the children received special "remedial" instruction; special teachers gave them instruction in numerous fields, such as general science, music, nutrition, and physical education. Classes were considerably smaller than those previously attended by the pupils, and the children received much individual attention. The children were tested when they were transferred to this school and again after two or more years of attendance. At the time of the first test, the children ranged in age from about six years to twelve years and three months. The average difference in I.Q. (including both gains and losses, regardless of sign) between the first tests and tests administered after two or more years was 5.5; in the case of fifty-eight and a half per cent of the children, the changes ranged from a gain of not more than five points to a loss of five points. The averages for the group as a whole on the first and second tests were substantially the same; there was an average gain of only 1.11 points. Gains in I.Q. occurred primarily in the case of the youngest children (the largest gain, 5.33 points, was shown by eight-year-old children who had been in the school an average of two and a half years), while the older children showed losses (thirteen-year-olds and fourteen-year-olds who had been in the school an average of about three years showed respective average losses of .72 and 3.40 points).

As stated by the investigators, the findings indicate that a school curriculum carefully planned to meet the needs of this group of dull-normal children failed to alter significantly the pattern of

¹ For a description of this school, see Featherstone (16).

their mental growth as measured by standardized intelligence tests.¹

A study by R. L. Thorndike, Flemming, Hildreth, and Stanger (84) similarly deals with the intelligence of children who had spent two and a half years or more in elementary schools that educators have regarded as being superior, including two schools looked upon as "model" schools, and that have attracted thousands of visitors from all parts of the country each year. Comparisons between initial tests and tests after at least two and a half years of attendance showed that, in the case of two of the schools, the I.Q.'s remained substantially the same (an average gain of 1.40 points in one case, and .65 point in the other); in the case of a third school, there was a gain of 6.17 points. The gains in this school were as large when comparisons were made between tests and retests at the end of one year as they were when comparisons were made over a period of five or six years. The authors raise the question as to why one school should show appreciable gains while the other two did not; they could find no evidence that this school was superior to the other two, and they suggest that the difference may perhaps be due to selective factors and to the fact that the testing program in the one school was more variable than in the others.

Summary. Again it appears that the values of a presumably superior educational environment must be sought more in the adjustments and habits and in the ways in which children apply their intelligence, rather than in a gain in I.Q. as measured by standardized tests. A question can be raised, of course, as to what constitutes a superior educational environment; but on this question, as on the question as to why some schools seem to produce gains while others do not, we have no definite information. Apart from these considerations, it may be added that the results in studies such as those cited immediately above might have been

¹The authors add that the results might be quite different if measurements were made of factors other than changes in I.Q., such as changes in degree of personal satisfaction and adjustment. A preliminary report by Featherstone bears out and amplifies this conjecture (17).

different if the children had been transferred from conditions of extreme deprivation to a more stimulating school environment. Future research, perhaps quite speedily, will clarify many issues. In the meantime, the studies by Wellman and her associates suggest, more impressively than any previous series of investigations, that the limits set by nature on intellectual development are less fixed and narrow and that the potentialities to be realized through nurture are greater than has commonly been supposed. The implications of these findings for human betterment are obvious. If further studies confirm and extend the results so far obtained, it would be a matter for rejoicing; if they modify or contradict the results, that too would be valuable, for in the process, more will be learned concerning the development of intellectual ability and factors that influence it.

In passing, it may be reëmphazized that the foregoing discussion does not imply that the stimulus value of nursery-school education or of later educational provisions can be measured simply by "before-and-after" mental tests. As indicated in earlier chapters and as suggested by several of the investigators whose studies have been reviewed above, such educational provisions are usually not designed primarily to accelerate the development of abstract intelligence of the children who attend. As noted earlier, the opportunities so afforded may have an effect on the child's everyday habits and skills, his motor development, and his social and emotional adjustments, quite apart from any benefits that may accrue to his mental ability as measured by standardized tests. There may be gains also in the child's "functioning intelligence," in the effectiveness and the ways in which he puts his intelligence to use, even if there are no demonstrable gains in his intelligence quotient as measured by mental tests.

From everyday observation, we can note that two children may have the same I.Q. yet differ decidedly in the way they use their abilities. Children may differ so much in their everyday behavior and adjustment that the fact of their similarity in intelligence seems to be a minor detail. Moreover, the manner in which in-

telligence functions in the life of an individual child will not simply depend upon environmental stimuli but will be influenced also by the constellation of factors that constitute what we call an individual's "personality." Much of the research on intellectual ability has dealt with intelligence as a thing apart; relatively little systematic study, from a developmental point of view, has been made of the way in which mental ability functions in the child's "all-round" development.

Implications of Changes in I.Q. for Future Use and Development of Mental Tests. For all the imperfections of intelligence tests (imperfections that are recognized most by those who have devised and systematically applied them), intelligence testing represents one of the most substantial achievements of the science of psychology. Now, a curious interpretation sometimes placed upon results that show changes in I.Q. is that these results demonstrate the uselessness and lack of value of mental tests. Actually, as can be seen, such results support just the opposite conclusion. If a stimulating educational environment can produce gains in intellectual capacity, it becomes all the more vital to apply mental tests to find what changes, if any, are being accomplished by a given environment, including a given curriculum or educational program. On the other hand, if the educational environment can exert little or no influence on a child's intellectual capacities, mental tests remain quite as useful and important as they have been in the past as a practical aid in understanding and guiding the child.

GIFTED CHILDREN

In studies conducted by Terman and his associates and by Hollingworth (35), children of high intelligence have been observed over a period of years. The original investigation by Terman (74) included 1,000 children, all with I.Q.'s above 130, who were compared with unselected children. Many tests and ratings were applied. The gifted children, as a group, were somewhat superior to their less intelligent peers in physical status and health. In the

majority of cases, the mental superiority of the gifted child appeared at a very early age in such forms as precocity in learning to talk, greater intellectual curiosity, greater wealth of information, and a desire to learn to read. Even when the children had similar educational opportunities in public school, the gifted children were more rapidly promoted and stood decidedly higher in educational achievement tests.

The view that the highly intelligent child is a one-sided creature, more likely than the normal child to be superior in some respects and deficient in others, is refuted by measurements of these gifted children. The reading of gifted children surpassed that of their unselected peers in both quantity and quality; gifted children had a larger fund of play interests and of play information than unselected children; they also surpassed in tests of honesty, trustworthiness, and similar moral traits.

The above statements review some of the many points of superiority shown by highly intelligent children as compared with children whose average intelligence is lower. It must be remembered, incidentally, that these statements describe the characteristics of gifted children as a group, rather than those of any one particular child.

These gifted children were once more studied after a period of six years, and among the many findings obtained, are the following: As in the original study, intellectually gifted children as a group are found to be slightly superior to unselected children in health and physique; they average better than the general school population in character traits, emotional stability, and social adaptability; gifted boys are no less masculine than boys in general, while gifted girls tend to be somewhat more masculine than girls in general; gifted children excel in school progress as measured by promotion to higher grades, but they excel even more in mastery of school subjects; as a rule, gifted boys maintain or almost maintain their superiority from childhood through adolescence, while girls somewhat more frequently show a drop in I.Q. at the time of adolescence or soon thereafter.

The interesting feature in this study was that, after the passage of six years, the children, as a group, exhibited much the same all-round superiority as they had displayed when studied at an earlier age. Individual children, of course, varied from the general trend, and some showed changes in I.Q. as they grew older.

In the year 1938, information was obtained in the case of over 1,300 gifted children who, earlier, had been studied during elementary- or high-school years.¹ It was found that nearly ninety per cent of the boys and eighty-five per cent of the girls had gone to college; that, although the gifted children were on the average nearly two years younger than their classmates, they were about three times as likely to graduate with honors; that about two fifths of the boys and one fifth of the girls had earned half or more than half of their expenses as undergraduates; and that the gifted group received more than its proportionate share of class and student-body honors, except in athletics. Although a large majority of the individuals made superior records in college, some did not. Of those who did not do well, the poor college record could be attributed, not to lack of ability, but to various other factors—such as lack of interest, maladjustments of various kinds, or deliberate neglect of college studies in favor of private pursuits or extracurricular activities. It appeared that many of those who did not do so well in college were influenced by the small amount of study required to earn good grades prior to college and had underestimated the amount of work required to make a good record in college. Of those who had completed their training and could be classed as employable, less than one per cent were unemployed in 1936, even though this was a period of widespread unemployment. The moral record of the group was found to be “well above that of the generality.” At least half of the boys were launched upon promising careers, and several of them were already nationally or internationally known.

In summarizing general accomplishments of the group, Terman and Oden state that, although a considerable proportion of

¹ For a full account of the findings, see Terman and Oden (77).

the subjects had not lived up to their ability, the accomplishment of the group as a whole was as good as could reasonably be expected, in view of the fact that most of the subjects were still under thirty years of age and that the economic depression had prevented many from going to college and, in many other cases, had interfered with postgraduate professional training or occupational placement. A very interesting conclusion that is drawn from examination of the records of these subjects by Terman and Oden is that, for children brought up under present-day educational regimes, the possession of I.Q.'s in excess of 140 or 150 adds little to one's achievement in the early adult years. Above this level, adult success is largely determined by social adjustment, emotional stability, and the drive to accomplish. This does not mean, the investigators state, that the potentiality for achievement is the same for individuals with an I.Q. of 150 as for persons with higher I.Q.'s; rather, they state that the more probable interpretation is that we have not learned how to bring the highest gifts to fruition and how best to guide the personality development of those who are extremely bright.

Evidence that the child who stands high in intelligence tends not only to be superior in other respects but also to maintain his early promise during later years and into maturity is shown in studies by Hollingworth, cited at an earlier point. In a review of literature in this field, Hollingworth (36) notes that, as a group, gifted children maintain themselves in superior fashion in their later academic work and in their adult adjustments. However, there are individuals who do not do so well at maturity, indicating the important role that factors other than intelligence may play. As stated by Hollingworth, intelligence alone is not enough for "success."

Education of the Gifted. Gifted children represent a valuable social asset. Although such children are quite resourceful in finding ways of putting their abilities to work, they cannot themselves create an environment that would bring out their full poten-

tialities.¹ What often happens is that these gifted children are held back rather than helped. If they are made to slacken their pace to that of classmates of the same age, they have time on their hands. Hollingworth estimates that, in the ordinary elementary-school situation, children of 140 I.Q. waste half of their time and those above 170 I.Q. waste practically all of their time! In one case, one of the most tangible results of a child's brightness was an increase in the amount of laundering that the mother had to do because of the amount of cleaning of blackboards and erasers this child engaged in while her classmates were plugging along at their lessons. Frequently a bright child becomes a strain upon the teacher, especially if the teacher resents pupils that know more about some things than does the teacher himself or if the child not only knows much but shows no hesitations in parading his knowledge and correcting others. If a gifted child is promoted in keeping with his academic abilities, he may in turn have difficulty because he has been placed with older and bigger children. Rules and regulations, customs and restraints of various kinds conspire to prevent him from realizing his potentialities, especially if his parents do not have the means or the desire to help; and it would be "an impossibly shrewd and strong child" who could work out his own education. Should he want to use some of his spare time to earn money for his own needs, he would not only encounter present-day difficulties in getting employment but would also run afoul of truancy laws and child-labor restrictions.

Following are a few illustrations from Hollingworth of the problems of bright children in school. A ten-year-old boy with an I.Q. of 165, was referred as a problem: "Not interested in

¹The late Professor Leta S. Hollingworth has made outstanding contributions in the field of the education of gifted children. During recent years, she directed an educational program for bright public-school children. The results of this experiment are being compiled. For a report of some of the developments in the study, see Hollingworth (37, 38).

schoolwork. Very impudent. A liar." His trouble was by no means a lack of interest. The teacher had resented the boy's superior knowledge and had given him a "raking-over" before the whole class. A friendly councilor to whom he was telling his troubles suggested that he should learn to be more tolerant. But the child was so filled with resentment that when told: "One of the first things to learn in the world is to suffer fools *gladly*," he heard only the word "suffer" and replied: "Yes, that's it. That's what *I* say! Make 'em suffer. Roll a rock on 'em." As the conversation proceeded, however, he was "straightened out on the subject of who was to do the suffering. He agreed to do it himself." The epithet, "Perfesser," was thrown at another ten-year-old child, of I.Q. 175, when he tried to discuss events of medieval history; and when he persisted, his schoolmates pulled his hair, tore his shirt from his back, and hit him with a beer bottle. Two other bright children came to the new school followed by reports that they were hard of hearing. Actually, they had good hearing; but in self-defense, "they had learned not to hear the insupportable drill on things they had known for years," so that their teachers thought them deaf. When transferred to classes for bright children, their hearing turned out to be good, "almost too good!"

The children in Hollingworth's experiment were able to cover the regular elementary-school course requirements in less than half their time and were able to push far ahead into projects with which the average child, and even the average adult, usually does not become familiar. Hollingworth has emphasized that a program of intellectual training represents only a part, however, of the bright child's needs; quite as much does he need training and opportunities for the development of wholesome attitudes toward other persons and competence as a social being. Hollingworth lists five special problems of general conduct faced by bright children: to find enough hard and interesting work to do at school, to learn gladly to accept and be tolerant of others who are less able, to keep from becoming negativistic, to keep from becoming hermits, and to avoid the formation of habits of extreme chicanery.

MENTAL DEFICIENCY

What actually constitutes feeble-mindedness is largely a matter of definition. A frequent procedure is to class as feeble-minded those individuals who have an I.Q. below 70. Children with low intelligence are roughly classified into various groups. I.Q.'s below 25 characterize idiots; between 25 and 50, imbeciles; between 50 and 70, morons; between 70 and 80, border-line cases, and between 80 and 90, dull. These names are quite arbitrary; the individual's underlying ability, rather than the label, is the important thing to consider.

Mental deficiency is usually a condition which characterizes a child throughout his development; in the usual case, the defect is continuous, rather than a condition which either suddenly or gradually sets in after a period of normal growth.

By reason of the fact that children at the lower end of the intellectual scale usually require special care and protection, considerably more attention has been devoted to them than to children at the upper end of the scale. Children who are not feeble-minded but of border-line and dull-normal intelligence have produced many problems in the elementary school. A large proportion of pupil "troublemakers" are youngsters with low intelligence. The "troublesomeness" of such children does not arise, however, primarily because a child of low intelligence has a special bent for getting into difficulties. The trouble lies more in the kinds of demands that are placed upon him. Pressure is put upon him to keep pace with others in the conventional curriculum. The less able he is in the usual school subjects, the less opportunity there is for him to enjoy the satisfaction that comes with achievement. Frequently, to be sure, special remedial work can go far to help him gain satisfaction through mastery and thus provide more of an incentive for academic work. Also, as has been suggested in studies reviewed earlier in this chapter, many children of apparently low intelligence may have latent potentialities and may considerably improve their status under proper environmental stimulation. However, even the most optimistic interpretation of available evidence concerning environmental

effects on intelligence does not suggest that the general problem of mental deficiency can be solved simply by a program designed to raise the level of abstract intelligence of children who are below normal.

More important is the adjustment of educational demands and opportunities to the child's abilities, a policy which, in effect, might raise the level of the children's functioning or practical intelligence, even if no noteworthy gains were shown in the I.Q. as measured by present tests. The problem of adapting educational procedures to children of lower mentality has been sharpened in recent years by the fact that children who, in the past, would drop out somewhere along in the grades when they reached the age of fourteen or thereabout are now compelled to remain in school. Some years ago, the high-school population tended to represent a somewhat select group of children; but now, in many school systems, it represents practically a normal distribution of intelligence, including a large proportion of children whose minds are not especially receptive to classical high-school requirements, such as algebra and Latin. It has been necessary to change requirements in the direction of a program that more realistically meets the abilities and needs of such children. In the process, it appears that much of what is introduced in this manner is also of value to children of higher intelligence.

As indicated above, an important aspect of the education of dull children is to cultivate and utilize qualities that are most educable, rather than to badger them into being mathematicians or historians. Although good traits tend to be positively correlated, the bright children by no means have a corner on the market. The child who is less bright has much the same potentialities for acquiring good habits of everyday social behavior. Furthermore, as noted in an earlier chapter, there is relatively little correlation between mental and motor abilities, and there are many everyday skills (except those that require a good deal of inventiveness and problem solving) that the less intelligent child can master practically as well as the bright child. Indeed, such skills may be quite as remunerative as the more learned occupations (for ex-

ample, the mechanic who makes a dental appliance often gets more for his time than does the dentist).

One complication here is the pressure of conventions and parental ambitions, and of pernicious traditions concerning "high-brow" and "low-brow" occupations. Children somehow get the notion, quite early, that it is more honorable to head their ambitions toward the learned professions. As a result, when children express their occupational preferences, they are likely to be considerably out of line in a large percentage of cases with what the child eventually will be able to achieve or would find most satisfying. In a study by the writer, it was found, for example, that when elementary-school children were asked: "What do you want to be? What do you want to do when you are grown up?" a large percentage of children with low intelligence mentioned such professions as medicine, engineering, teaching, and the like. Many such children would never be able to qualify. To be sure, many children do take their occupational preferences very seriously, but the drift is significant none the less, especially when it is noticed that the same discrepancy between what is regarded as ideal and what is practicable appears at later ages. In a study of high-school pupils, Proctor (65) found that about sixty per cent named professional work as their choice of future occupation and less than ten per cent named mechanical and industrial arts and agriculture. It is possible that, as the school program is brought more into line with children's capabilities, the practical projects undertaken in school may help to lend greater appeal to the kinds of work that a large majority of the children will ultimately have to do.

FAMILY STATUS, RACE DIFFERENCES

Children's Intelligence and Parents' Occupational Status. Intelligence tests of men drafted into the United States Army during the World War and numerous other studies of adults have shown that there is a wide difference between the average intelligence of individuals belonging to different occupational groups. The intelligence of men employed as unskilled laborers is lower on the

average than that of people occupied in the professions or engaged as business executives. Similar differences appear when the children of parents in different occupational groups are compared. Children of unskilled laborers, to much the same degree as their parents, stand relatively low in intelligence as compared with children in the professional classes. In tests given by Haggerty and Nash (30), the median I.Q. among grade-school children of parents engaged in the professions was found to be 116; children of skilled laborers had a median I.Q. of 98, while that of children of unskilled laborers was 89.

In Terman's study of 1,000 gifted children, who were selected at random, without regard to family background, it was found that parents who were engaged in the professions and who constituted a very small percentage of the population of the state provided a greater number of gifted children than did industrial workers, who constituted 57.7 per cent of the population.

It is interesting to observe that these differences in intelligence as related to occupational status also appear when measurements are taken of children between the ages of two and four years. Goodenough (28) made a sixfold classification of the occupations of parents of two- to four-year-old children who were given intelligence tests; they were arranged in terms of a rough hierarchy, ranging from the professions (medicine, law, journalism, and so forth) in the first group to unskilled labor in the sixth group. When two-, three-, and four-year-old children were thus classified, the average I.Q. of children of the professional group on the first two tests was 116.1, while that of children of unskilled laborers was 96. When the children were tested a second time, the respective averages were 125 and 95.8. The children of each succeeding occupational group, going upward from the unskilled laboring class to the professional class, showed a progressively higher average score.

Needless to say, individual differences within each occupational group are a good deal larger than the differences between the

average scores of different groups. The question naturally arises: "To what extent is the higher average intelligence of children of the "upper" occupational levels due to a better environment, and to what extent is it due to heredity?" A precise answer cannot be given to this question. A child's environment obviously may have an important bearing, but it is also possible that the native abilities of his parents played a part in determining their occupational status.

Intelligence and Family Size. Repeated investigations bring out the fact that parents of high intelligence have a smaller average number of children than parents with low intelligence. This trend has been accelerated, particularly during recent generations. In Terman's study of gifted children, it appeared that the average number of offspring per individual in the intelligence level represented by gifted children was fifty per cent lower than that found for the same families in the preceding generation. According to these findings, the average person representing the stratum from which the gifted children were drawn produces .72 of a child.

This finding that there is, on the average, an inverse relation between family size and intelligence is sometimes misinterpreted in popular discussions. It does not mean that, if parents have many children, the family as a whole will therefore have a low I.Q.; nor does it mean that, if a family is small, its members will therefore have a high I.Q. The relationship indicates that parents with high intelligence seem to limit the number of their offspring more, on the average, than do parents with lower intelligence. It is obvious that this trend, if it were to continue over a long period of time, would have important social implications.

Birth Order and Intelligence. Much study has centered upon the question as to whether the first-born child has advantages or disadvantages in his development as compared with children born later.¹ Some investigators have found that geniuses and gifted children occur with disproportionate frequency among the first-

¹ Studies in this field have been reviewed by Thurstone and Jenkins (85).

born; on the other hand, when averages rather than exceptions are considered, there is some evidence (although not entirely convincing) that children born later, up to the eighth child, have higher intelligence than the first-born. First-born children are more likely to be still-born, to suffer from abnormal delivery, to die during early infancy. On the whole, the evidence does not indicate that birth order as such is an outstanding factor in causing individual differences in mentality.

Racial Differences in Intelligence. Much controversy has arisen over the interpretation of differences that have been found in intelligence tests of various racial groups. Investigation has frequently shown that American whites obtain higher average intelligence scores than Negroes, American Indians and Mexicans with mixed blood; and likewise that, among the whites, some groups score higher than others. But it is possible that the people of different national origins in this country are not equally representative of the people who have remained in their native countries. It is also questionable whether the tests standardized for American children give an adequate comparative measurement of children of different national origins and of different races.

Illustrations of the degree to which intelligence scores of national and racial groups might be influenced by the sample of the population that is tested are given by Klineberg (45). In tests of children in France, Germany, and Italy, urban children scored consistently higher on the average than rural children, but the differences between the Nordic, Alpine, and Mediterranean groups as a whole were small. In performance tests of a group of American Indians, Klineberg observed that the Indians differed from white children in their attitude toward the examination; the children in the particular reservation that was studied did not seem to place as high a premium on speed as American whites. Indian children tended to work more slowly and to make fewer mistakes; white children, on the other hand, were more likely to sacrifice accuracy for speed.

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CHAPTER XVI

PERSONALITY PATTERNS AND PROBLEMS OF ADJUSTMENT

When we speak of an individual's personality, we refer to the quality of his total behavior, the organization and integration of his behavior as a whole.¹ Many definitions of personality have been offered, stressing now the totality of an individual's behavior as manifested in his social conduct, now the inner organization of his needs and purposes. To define a concept so big and inclusive as "personality" requires mouth-filling words, for the term includes everything a person has "got about him" that can be seen and a good deal more that cannot be seen, and also the way in which everything about him expresses itself and "hangs together."

Sad to say, once a psychologist has defined personality in terms of totality or wholeness, he finds either that he must stop at that point or, if he is poised to give a lecture or write a book, that he must proceed to take the whole apart, by way of a discussion of the aspects of personality, traits, characteristics, goals, purposes, patterns of activity, and so on; for he cannot talk about everything in the same breath. Even if he has discussed each manifestation in terms of the "whole," he still is likely to find it difficult to put the thing together again. For this dilemma there is at present no solution, for the "secrets" of personality have not yet been revealed to mortal man. One escape, of course, is to devise an arbitrary formula and, by means of words, fit human nature to the formula, even if the formula does not actually fit human nature. This device can be useful if it helps to formulate the

¹ For general discussions and definitions of personality, see Allport (1), Stagner (51), Woodworth (65, 66), Dashiell (13), Murphy and Jensen (42), and Lewin (34). Jones and Burks (32) have given a succinct and comprehensive review and discussion of studies of personality development published from 1920 to 1935.

problem and leads to open-minded inquiry; but if it does not lead to fruitful inquiry, such a formula merely serves as another means of phrasing our ignorance.

Actually, of course, personality is not a distinct thing or entity. It cannot be considered apart from the situations in which the individual operates. Indeed, an individual's response in different situations will often vary so much, at least to outward appearances, that he seems to represent several "personalities."

In discussing personality, we confront a problem that arises in every chapter of a book dealing with child psychology, for every aspect of a child's development and behavior is more or less interrelated with other aspects. An even greater difficulty is that each individual is unique in the organization of the abilities, habits, and drives which constitute his "personality" in a given setting. As a result, a treatment that is faithful to the definition of personality in terms of "wholeness," while including a great deal that holds true for nearly every person, would still require that a separate book (and an unconscionably long one) be written about each individual in the world; and since the organism is never static, the book would have to be in continuous process of revision. Obviously, it would be impossible to write a thorough-going book of this sort in the first place, much less to keep it revised.

In recent years, the "whole child" has gained much popularity in educational discussions. The "whole child," as distinguished from just a plain *child*, came into being as a remonstrance against the kind of child who, it is maintained, has too often been served up in parts in psychological research and educational practices. From the point of view of understanding the child, the idea of his "wholeness" carries the emphasis that we may obtain quite an unrealistic picture if we study him in a highly piecemeal fashion by isolating each feature of his behavior from the larger context of which it is a part and that the picture will be especially unauthentic if we measure the child's behavior in an experimental situation which omits crucial factors. From the point of view of

educational procedures, the idea of the child's "wholeness" is in part aimed against compartmentalization of his training in a manner that does not correspond to his own ways of living and learning.

It is axiomatic, of course, that the more we can study children's behavior in terms of its context, meaning, and function, the better our understanding will be. When we have recognized this, we still have to realize that we can never go the whole way toward understanding the endless complexities and interrelatedness of behavior and the complex motives that underlie it. The brain has not yet been created that can "take it all in."

One means of investigating personality is to approach the subject in terms of certain outstanding characteristics or forms of behavior that can more or less be singled out for separate study. Another approach is to try to probe the individual's dominant motives and to study how various forms of behavior, some of them even inconsistent with each other, subserve such motives. Actually, either approach involves attention to the other. As noted in an earlier chapter, two children may, for example, exhibit what seems to be similar aggressive acts, such as snatching the toy of another child and hitting him. But these acts may have quite different meanings. In one case, we may find that aggressive behavior constitutes a large proportion of the child's total behavior in his dealings with his fellows; in the other, such behavior may constitute only a small proportion. Again, one child's aggressiveness may be relatively incidental, as when he pushes aside a child who obstructs a group enterprise; while in another, aggression may serve more hostile intentions, as when he habitually goes out of his way to hit another as an apparent act of revenge. As noted in an earlier example, aggressive behavior may be a sign that a child is improving in his social relationships with others, as when he hits to break the hold of a dominating companion while he is seeking wholesome contacts with a larger group; in another, aggression may be associated with chronic frustration and failure in the child's efforts to establish satisfying

contacts with others. Practically any form of behavior may have different meanings and serve different functions in different individuals, or even within the same individual at different times.¹ Indeed, forms of behavior that seem quite the opposite of one another may spring from motives that have elements in common, as when one child gains recognition by being a rebel, another by being docile.

Early Manifestations. From early infancy, babies show differences in "personality." No two are alike; each presents his own distinctive characteristics. Shirley, who studied the development of twenty-five babies during the first two years of life (48), proceeds from a definition of personality as "the sum total of all the individual's behavior" and sets forth the general principle that "personality differences are apparent at birth." Shirley describes numerous early characteristics that distinguished babies from one another from the time of birth, such as irritability, tone and timbre of cries, motility, and tonicity of muscles. She describes also the manner in which, at an early age, distinctive patterns of behavior could be observed that characterized a baby's reactions in a variety of situations. Similar observations are reported by Gesell in an earlier study of a pair of twins. Although both children shared the same home, the same mother, and similar physical health, the children showed consistent differences in such matters as "placidity, length of crying, vigor of protest, tolerance of physical discomfort, readiness of smiling, social responsiveness," and so forth (19). Gesell regards it as probable that these differences "bespeak an inherent if not inborn difference in temperamental make-up." Shirley likewise noted evidence of inherent differences, but, in common with Gesell, emphasizes the difficulty of evaluating the relative roles of inborn and environmental factors. The interaction of hereditary and environmental factors in a child's development is so complex that it would be impossible to isolate either in pure form.

¹ Ways in which varying forms of behavior may fit into larger patterns have been described by H. H. Anderson (2, 3).

Shirley's observations deal, among other things, with the question as to the constancy or permanence of individual characteristics as children mature. She noted that children exhibited a good deal of consistency in their behavior, relative to the developmental trend. For example, two infants showed a decrease in irritability as they grew older in keeping with the trend of the group as a whole, but one of them remained consistently the most irritable and the other consistently the least irritable of the group. Again, she noted that sometimes, as the infants matured, a given form of behavior "waned and lapsed, only to be supplanted by another that apparently was its consistent outgrowth." For example, one baby was distinctive at an early age for his "timorous crying"; this crying waned, but then he exhibited "apprehensive watching" and, at a later age, showed a similarly timorous trend by hiding apprehensively behind his mother and showing reluctance to play and talk in the examiner's presence. Shirley also noted that there was a considerable degree of consistency in the general pattern of a child's behavior. When "profile charts," showing ratings and scores for each baby on a number of characteristics, were prepared, the profiles of the different babies were so unlike in contour that the examiner could identify them without names, and although the pattern changed with age, there were always "identifying earmarks." Usually one or two items were conspicuous for each baby.

Similarities were also observed between the babies and other members of their families. For example, social reticence was noted in the baby and all members of one family, sociability in another. Shirley points out that, in some instances, "specific training by the mother seemed to have little effect in counteracting a strongly established trait or developing one in which the child was weak." She adds, however, that it is possible that "a more subtle and pervasive influence in the environment was encouraging the very trait that a mother was trying to discourage." At any rate, during the first two years, the babies manifested personality traits that corresponded to those of their families.

As can be noted, the observations reviewed above strongly suggest that personality differences may be due in part to innate factors. In commenting on this, Shirley also brings in the reservation that the results do not yield conclusive proof and, in connection with this topic, she takes note of findings in a study by J. E. Anderson (5) which show impressively the way in which differential environmental factors operate from the time of birth in the numerous everyday details of child care and later in the countless contacts between parents and children and in the varied provisions made for children in different homes.¹

Fortunately, we can raise this question as to possible hereditary influences on personality development without becoming embroiled in a "nature vs. nurture" controversy. The influences of environmental conditions are so obvious in everyday life that no one could ignore or deny them. Moreover, as noted above, the interaction of hereditary and environmental factors is so complex that it would be impossible, at best, to trace "pure" evidence of heredity.

When differences in children's early training are taken into account, it is not difficult to conceive how, on this basis alone, a child may become a timid creature or a braggart, a tactful child or a boor, independent or dependent, jealous or generous and disinterested. It appears that many of a person's ways of behavior are determined by the training he receives from his parents during childhood, and these characteristics may follow him into adult years and influence his conduct toward his own children when he, in turn, becomes a parent. In extreme cases, some dominant behavior patterns seem to be visited upon a child from past generations.

No purpose is served, however, by a sweeping rejection of heredity as a factor. Even if we waived the question as to the inheritance of specific personality "traits" we can at least recog-

¹ A study by Tucker (59) based upon observations in a coöperative nursery school in which mothers, who were relatively homogeneous in educational and socio-economic backgrounds, took turns as teachers, gives considerable detailed information concerning differences and similarities in mothers' practices.

nize that heredity may play a role in determining behavior within broad limits. To the extent, for example, that heredity may be a factor in determining an individual's bodily size and bodily mechanics, his endocrine functions, and so forth, it will also, to some extent, influence factors such as motility, endurance, and irascibility that might in various ways ultimately influence specific ways of behaving.

Constancy and Changes in Behavior Patterns. The topic of constancy of behavior patterns, considered in the above review of Shirley's study, has been considered in other investigations. In a study of the laughing and smiling of infants, Washburn (61) observed each of fifteen children at intervals of one month during the first year of life. The infants differed much in risibility and frequency of laughing, smiling, and crying. These differences remained quite constant from month to month; the infant who laughed and smiled much, or who laughed little and cried much, or who was sober as compared with others, tended to show similar behavior when observed from time to time. Most of these children, when studied once more in their second year, showed characteristics similar to those exhibited during the first year. It has also been observed that there is a good deal of consistency from month to month in the amount of crying of particular infants as compared with other infants, especially during the second half-year of life (Bayley, 7).

In a study of children's conflicts with one another in nursery schools and kindergartens, it was found that in some groups there was a high degree of constancy (rank-difference correlations as high as .80) in the number of a child's conflicts, as compared with other children, one year as compared the next. Again, in a study earlier referred to, of the behavior of a group of nursery-school children, some of whom were "new" to the nursery school and some of whom had previously attended during one or two years, it was found that there was a relatively high relationship between frequency of social contacts in the spring and fall (a rank-difference correlation of .66 for all children combined; .82 in

the case of "new" children and .60 in the case of "old"), this in spite of the fact that the "new" children, on the average, made larger gains than the "old" children. Although, as noted earlier, a measure simply of the frequency of social contacts and conflicts does not reveal the varying ways in which such behavior may function in the case of different children, this tendency toward constancy in relative frequency of such behavior is still of some interest.

Fifty children were studied while attending nursery school, and again at a later time, in an investigation by Driscoll (16). Included in the measurements were: five mental tests, measurements of special intellectual abilities (such as outstanding language ability, memory, and the like, as revealed in intelligence tests), height and weight, stability of performance (as measured by the degree to which the children's I.Q.'s varied on different tests), and "personality adjustment" (as determined by teachers' reports). (The author points out that the personality ratings were unavoidably subjective and not as trustworthy as one could wish.) Children were given a composite score on the basis of the various ratings (excluding height and weight) and were classified into five groups, paralleling a classification used in dividing the children according to I.Q. (These five classes were: normal, bright, superior, very superior, and genius.) The children's ratings on this basis during preschool years were compared with their ratings after the age of five, and the resemblance between these composite ratings was found to be higher than the resemblance found when only the children's I.Q.'s were compared. Twenty-three, or forty-six per cent, of the children, when tested and rated after they had entered school, remained at the level at which they had been classed while attending nursery school. Twenty-five or fifty per cent, of the children shifted from one level to the one immediately above or below (for example, from "very superior" to "superior," from "very superior" to "genius," or from "normal" to "superior"). Only four per cent of the children changed as much as two steps in the classification (for example, from normal

to very superior or from genius to superior). Group trends in quantitative data such as these do not, of course, reveal the pattern or organization of behavior in individual children.

Some Problems of Method in the Study of Personality. In the study of personality manifestations in young children, much use has been made in recent years of the procedure of observing and recording what children do and say in their everyday activities. From such records it is possible to obtain quantitative scores that show how children compare in sociability, resistance and coöperativeness, in their tendency to be active, to lead or to follow, to show emotional outbursts, and so forth. This method of direct observation has provided important information concerning developmental trends in the behavior of children as well as information concerning the characteristics of individual children.

The procedure of simply counting the frequency of this or that bit of behavior may fail, however, to reveal significant features of a child's behavior. In one series of observations, children who first had been studied while they attended nursery school (6) were later observed after they had entered the kindergarten (30) by means of a technique that measured factors such as frequency of social contacts, use of materials, and laughter and crying. In addition, teachers' reports and case-study diary records were obtained for each child. The quantitative scores showed only a small degree of correspondence between the behavior during one year and that during the next in many of the child's activities. But apart from quantitative scores evidence of consistency as well as of change in behavior appeared in this study. One child, who was outstanding as a leader in the nursery school, continued to take the initiative and to attract a following in the kindergarten; but another child, who talked much during the preceding year, now talked little. In the latter case, the change was related to a change in companionship; the child spent much of her time with a talkative child in the nursery school and associated with a non-talkative child in the kindergarten, but the real "cause" could not be determined by the data that were available. Another child,

who played quite independently of the group in the nursery school, continued to play by herself most of the time in the kindergarten. Still another child, who seemed unable to contrive his own amusement in the nursery school, continued to show the same wandering tendencies a year later by nosing now into this group, now into that. But there was one child who appeared to have undergone complete transformation during the year. Although previously he had made scarcely any contacts with other children, his name now stood high on the list; although formerly he had never been seen to laugh while the records were being taken, he now had next to the highest laughter frequency, and this laughter was associated with changes in other aspects of his behavior.

A measure of the frequency of certain forms of behavior, carefully defined in overt terms but studied as isolated items may quite fail to give an authentic portrayal of a child's behavior. Two children, for example, may receive similar tallies for "use of material" during a given interval, although one putters aimlessly with a toy while another's use of material is a feature of a well-organized enterprise that is shared with other children. An isolated tally for each bit of behavior does not fully reveal the pattern. In spite of these limitations, quantitative records of bits of behavior may still tell us a good deal about a child, although their significance is likely to be greater in the case of some forms of behavior than in the case of others (for example, a tally of the frequency of a child's crying, or of the frequency of his display of nervous mannerisms, tics, nail-biting, and so on, as compared with other children will give significant information about him, even though the circumstances under which such behavior occurred, and the way in which it is related to other features of the child's behavior, may be different in the case of different children).¹

¹There is no space here to consider the many problems of methodology involved in the gathering and interpretation of data in connection with the use of the method of direct observation, and other procedures. In various earlier chapters, reference has been made to studies using a wide variety of techniques, such as direct observation, play interviews, oral interviews, projective techniques (see reference No. 3 in Chapter XII), observation in semicontrolled situations, rating scales (Conrad, 12), sociometric techniques (see reference No. 40, in Chapter VI), and studies that combine a variety

Apart from problems of method of study, there is also the problem of obtaining a representative sampling of the child's behavior; his behavior may differ in different situations, and to the extent that this is true, findings obtained through a study of him in one environment (such as in school) may fail to reveal significant facts that might emerge from a study of the same child in various other situations.

Later Behavior Trends. When a study is made of informal school records, biographical materials, and case histories, many trends appear that can also be detected more or less clearly in everyday observations of children.¹ Any parent or teacher can testify to the way in which a child remains much the "same child" from year to year, in spite of tremendous changes in his behavior as he develops from year to year, but sometimes it is reported that the child has become a "different child." That there should be a high degree of sameness is, of course, no more than what one would expect. In many cases, the environment has a high degree of substantial sameness over a period of years. Even when decided environmental shifts take place, the child's reaction to changing situations, and even to changes within himself that occur in the process of growth, will perforce be influenced to a large degree by ways of behaving that are already established. However, this apparent "sameness" may be somewhat deceptive, for changes may be so gradual and continuous that his elders do not notice shifts that would be apparent if his behavior were compared at intervals of months or years, rather than observed from day to day or from week to week. On the other hand, there may be more "sameness" and likewise more difference than meets the eye.

Evidence of characteristics that persist over a period of years can frequently be observed. For example, a child at the age of

of procedures. For a general discussion of methods of study, see Murphy and Murphy (43), Murphy and Jensen (42), J. E. Anderson (4), Goodenough and Anderson (23). Applications and problems in the use of various adaptations of the method of direct observation, in which pioneer work was done by Olson (44, 45), Goodenough (21, 22), and Thomas (58) have recently been reviewed by Jersild and Meigs (31).

¹For illustrative biographical accounts, see, for example, Gesell (20), McGraw (36), and Dollard, *et al.* (15).

three years in the nursery school was notably lacking in "sociability" with other children and was primarily interested in adults. When he arrived in the morning, he ran to the adults on the grounds, greeted them enthusiastically, hovered near them, and entered into conversation with them. He took delight in the use of language, and even at the early age of three, he would play with synonyms and rhymes in rephrasing his own statements or statements made by others. He avoided contacts with other children, less, apparently, through fear than through lack of interest (in one series of observations, he made eighteen "social contacts" with other children, as compared with a high score of over 200 contacts by one child and a median score of 130 in a group of eighteen children). On occasions when he was invited by other children to join in their play, he often would find excuses. He was impatient of certain "childish" characteristics in others; he disapproved, for example, of the lack of consistency shown by others in their make-believe play. (He would protest: "Why don't you call it by its right name?" and when another child suddenly shifted from bus play to train play with the same material, the boy reproachfully said: "But you just called it a bus.") Unlike many other children, he seemed most to enjoy routine activities and story and music periods under the direction of the teacher, as distinguished from free play.

In the nursery school and kindergarten, some of the teachers regarded this child's lack of robust sociability with other children as a defect, and took steps to get him to join in more group activities. But such measures met with relatively little success and he seemed to be quite satisfied with his mode of life. Advancement to the early grades in school gave a new impetus to this child's use of language; he continued to fraternize relatively little with his classmates, except in connection with class projects; periods of "free" activity were not much to his liking; he was rather inept in his motor activities; and he received little favorable notice from other children (there were occasions when he was teased if the teacher was absent). When the teacher was in charge, he gave

rapt attention; he was ready with his answers, phrased them well, and offered supplementary information and opinions. When school was over, it was noted on occasion that he would take pains to be the first to enter the school bus, so that he could sit next to the driver. As was the case several years earlier, he seemed to be quite content with his small loaf of social intercourse with other children. To be sure, the foregoing account does not deal fully with this child's "personality" as a whole, but it does give evidence of certain continuing characteristics within the school environment.¹

A somewhat different picture appears in the case of another child, who, in the nursery school and during subsequent years, made strenuous but not notably successful efforts to gain the attention and to win recognition from other children. At the age of three, his techniques for gaining attention frequently took the form of peremptory commands ("Watch me jump!") or competitive remarks and acts ("I can do it better." "It's my birthday, too," when actually it was not); he gained a good deal of momentary notice by virtue of his physical prowess and his assertiveness. He showed relatively little interest in adults except as "sounding boards for his own egocentric communications." He showed a good deal of lack of regard for the rights of others (for example, at morning inspection he would push ahead of others waiting in line) and, through his lack of tact, met with a good deal of opposition. In adult-directed activities, he would coöperate well when he was the center of attention, but he was frequently mischievous and destructive when others were contributing.

During the postnursery-school years, many of these tendencies persisted, some of them in modified form, even though the child was subject to a good deal of discipline from his peers and even though his teachers tried to "improve" him. As he grew older,

¹The accounts of this child and some of the others here described are drawn in part from records in studies by the writer and his associates, in part from school records of the same children, and in part from an unfinished study by Kathern McKinnon which traces the development of a group of sixteen children over a period of six years (37).

children increasingly ignored his domineering tendencies and so he focused more upon adults as a means of achieving status, whereas previously he had given little heed to adults; he complied readily with routine requirements (previously he had been rather resistant) and criticized those who did not. By the age of eight, most of the "positive" responses that he received came from his teachers.

At the age of eight years, he still appeared to be a child who was trying hard but unsuccessfully to gain recognition from other children and who used methods both crude and calculating to achieve his ends. He worked hard on his lessons but would employ devious means to maintain his status as an able pupil (such as copying the work of another pupil or lying about his conduct when he received unfavorable notice). In place of earlier domineering tactics, he became critical of others, pointedly called attention to the mistakes of other pupils, and so on. Records of his relations with other pupils indicated that they seemed to "see through" his efforts to attract notice and that at times they tended to ignore him and at other times to criticize and to tease him. The children seemed to have considerably less regard for him than did the teachers, and unlike the boy who was rather diffident, in a contented way, in his relations with other children, this boy gave signs of being under much strain in his relations with other children. In both of the cases just cited, a life history of the child's behavior and adjustments outside of school would undoubtedly throw light on many characteristics that cannot be appraised simply by observing the child in the school environment.

A different turn of events appeared in the case of another child, who was relatively unpopular with other children at the age of three, but attained a high degree of popularity with her classmates at the age of about nine [among other things, she was elected to the most important office in the class (37)]. In this case, the teachers "worked on" the youngster during preschool years to improve her social relationships, but not much happened. The child seemed to be bored by the incongruities in the play in

the nursery school, and her attitude seemed to alienate other children. (On one occasion, for example, she and another girl were playing with dolls. Her companion remarked: "Oh, Daddy has gone on a long trip. Come on baby, Daddy and you will go to the concert." The girl then said: "If he went on a long trip, how could he go to the concert with your baby?") Her companion made no further conversation.) However, the social situations in the elementary grades, revolving around definitely planned and organized projects under the guidance of a teacher and calling for an exercise of various intellectual skills, were more to this child's liking, with the result that instead of holding herself aloof, she now was in the center of things and was well liked by her fellows. Another child took a somewhat different tack. He was rather awkward and lacking in skill on the playground. This deficiency seemed to be a serious handicap at the preschool level, but in the elementary grades he took steps toward solving this problem by developing the art of being a spectator. While his classmates were playing on opposing teams, he would stand on the side line, keep a score card from day to day, chat knowingly with the teachers as to who would be likely to win and why (much as an adult baseball fan follows his team through the newspapers); in this way, the child seemed to get some enjoyment out of games without actively participating and, in the process, had conversations with his teachers which he seemed to enjoy.

Contrasting forms of behavior may appear that seem to have a certain underlying unity. Thus we may see a child whose behavior at the age of four years seems to be influenced by jealousy of a younger and brighter sister; at times she is loud of speech, pushes herself to the fore, and lies about her conduct when she has made her sister cry, while at other times she merely stands by as though unequal to the struggle. At six, evidences of jealousy still appear, but she is rather subdued at home, is "good," and uses quiet methods there to make her presence felt, though reports from school bring the disturbing information that she is "making trouble" and has told lies to the teachers. At the age

of ten, we see a somewhat different girl. Her "good" ways are now operating to full advantage; she takes responsibility for many household duties, seems to enjoy her duties, the confidence placed in her, the privileges won for her by her competence, and the authority that she wields, and, for the time being, at least, she seems to be as contented as any child can be.

A high degree of similarity in certain characteristics from year to year is often observed in the case of elementary-school children who present "problems" of various kinds. Frequently school records will show that a child who exhibits maladjustments in the upper elementary grades has a history of difficulties extending back to the first grade. Behind such difficulties may lie a complex tangle of habits and handicaps within the child himself and difficulties in his everyday circumstances. In like manner, we can find children who, over a period of years, exhibit similar outstanding "positive" characteristics, such as a knack for making friends; or a tendency to be deliberate, to plan carefully, and to stay with a job until it is finished; or a dominant and continuing interest—such as an interest in mechanics, in nature, or in art—that governs a good deal of the child's planning and daily activity. Whenever we find a continuation of similar behavior trends, it is difficult to determine to what extent such trends are due to continuing constitutional factors within the child himself, to what extent they represent habits and modes of behavior arising in response to conditions prevailing at an earlier time in the child's life and then persist as a residue, so to speak, through changing conditions, or to what extent they represent a reaction to persisting environmental conditions.

As noted in earlier chapters, the appearance of certain characteristics at a given age offers no guarantee that similar characteristics will persist into later years. We may, for example, find a child who seems to be quite an "extrovert," who talks, sings, and declaims without embarrassment at one age and then later gives signs of embarrassment and self-consciousness. Again, a child may appear to be rather scatterbrained and apathetic and

then show new vitality and ability to concentrate when something happens to capture his interest. A shift in the child's environment may bring out characteristics that previously did not have a chance to flourish, as when a bright child comes into his own and is recognized by his peers when transferred from a group of children who do not understand or appreciate him to a group of children more nearly like himself.

Changes in group interests and group values that occur during the process of growth may likewise have a variable effect on different children. For example, the child whose interest in reading and numbers was of little value in his social relationships with others at the preschool level may come into his own when he gets his teeth into "subject matter" in the elementary grades. The coming of puberty may give pause to a boy who previously showed much poise and confidence but now finds that others are physically more masculine than he and are more acceptable to the opposite sex; similarly, a girl may discover that her appearance and conduct which served her well in earlier years may be a hindrance to popularity at the time of puberty, and there may come quite a change in her previous care-free ways.

When, as sometimes happens, a child makes an apparent about-face in his behavior, the behavior that is now approved or disapproved may serve much the same purposes as were served by his earlier conduct. However, when such a shift occurs, it is not as simple as merely changing from one technique to another. The factors involved in any personality manifestation are so complex that they cannot be reduced to a single formula. To be sure, it is possible, when delving into an individual's past history, to piece all the material together into a more or less logical pattern; to show how the various changing or contrasting experiences, attitudes, interests, likes and dislikes, conflicts, fears, plans, and preoccupations at various times of life may be construed as events mobilized around persisting motives or fitting into the framework of a continuing style of life. However, such an after-the-event reconstruction must be accepted with caution, for we cannot reach

full understanding of a child's personality simply by deduction from a general formula. There is need for more investigations dealing, as far as is possible, with the interrelated aspects of the development of children over a period of years.

STUDIES OF CERTAIN PERSONALITY MANIFESTATIONS

Ascendance-Submission. Many personality studies have used as a point of departure the investigation of topics such as ascendance and submissiveness, introversion and extroversion,¹ inferiority feelings, and so forth. An effort was made in one investigation (McLaughlin, 38) to trace the origin of "ascendant" and "submissive" behavior by inquiring into the past lives of individuals who showed extreme tendencies in one direction or the other. Among the circumstances which appeared to be antecedents of submissiveness were the following: real or imagined physical defects, unfavorable comparisons with other persons, emotional difficulties at the time of puberty, friction, quarreling in the home, ridicule by schoolmates, feelings of shame due to sex experiences, lack of opportunity for initiative in the home, and rigid parental discipline. Among the antecedents of ascendant characteristics were the following: frequent social contacts, early assumption of responsibility, parental training, indulgence in early childhood by other members of the family, absence of discipline in the home, superior mental and physical ability, and skill in athletics. It was also observed that the person who assumes an ascendant attitude may use this attitude as a "front" to compensate for some recognized defect. There remains much to be discovered, however, before behavior of this kind is fully explained, for any one or several of the circumstances described above might be present in the lives of two people, and still the two might differ decidedly in their behavior.

In McLaughlin's study an effort was made to change the behavior of the extremely submissive or ascendant subjects by means of guidance, instruction, and encouragement. It was found that

¹ For a review of numerous studies of introversion, see Guilford (24).

very submissive persons could be changed in the "desired direction" more readily than the very ascendant.

Inferiority Feelings. Symptoms classed as evidences of "inferiority feelings" illustrate the diversity of expressions that may be associated with underlying problems. The person suffering from "inferiority feelings" may, according to the concept of inferiority reactions, develop a variety of symptoms as a means of overcoming, rationalizing, excusing, or expressing his difficulties in his struggle for recognition and prestige. Actually, such expressions range through the entire gamut of behavior and include many items that in themselves cannot be regarded as symptomatic. The expressions may range from nail-biting to pretended illness and insomnia. The individual may adopt a bold front, show an extreme desire to excel, strut, and swagger or boast, or assume a role of abject humility and deference; he may show symptoms of extreme self-consciousness, take on fads and frills, concentrate on a peculiar skill or eccentricity, take offense at friendly jests, show a strong appetite for praise, try assiduously to edge in upon conversations, take pains to voice his opinions and to dwell upon his experiences, revel in group discussions where his voice can be heard at all times, even though he has nothing important to say; or he may disparage himself in order to be refuted. He may distrust the motives of others, be quick to suspect a reflection upon himself and to go to his own defense. When engaged in any pursuit, he may have difficulty in losing himself and in enjoying an undertaking for its own sake. He may make attempts to prick the weak spots in the armor of others as a means of raising his own relative status or assuaging his own feelings of lack.

On the subjective side, the picture may include a variety of features, many of which seem inconsistent, including extreme self-consciousness, doubts, daydreaming, "hurt" feelings, much retrospection, rationalization of shortcomings, and so forth.

This list of symptoms, which includes only a few of the number that might be mentioned, contains many similar as well as many contradictory features, and the degree to which any or all of

them may be exhibited by any one person will vary considerably. Moreover, when "inferiority reactions" are described in these terms, it is clear that everyone has them to some degree. Some individuals will be found who exhibit many; at the other extreme are those who have few symptoms. But the majority of people will be found distributed between the two extremes, and cannot be said to suffer from a neurosis, unless we define "normal" reactions in our own culture as being "neurotic."

Many of the attitudes described under the heading of "inferiority" can be observed in young children and at later levels. In one study, (Smith, 50), over a thousand high school children were studied; teachers' ratings were obtained, and an inventory which included one hundred pairs of items was used. These items consisted of brief descriptions of symptoms, such as: "Feels so conscious of his faults that he can't enjoy anything"; "Feels he can't seem to mix with people the way he wishes he could." In connection with each item, the individual checks whether he frequently or occasionally or only rarely feels that way. The scores on this inventory of "inferiority feelings" were compared with other measurements of the same individuals. It was found that those who were "dominant" (as measured by a dominance-submission scale) generally had less inferiority feeling than those who were "submissive" and that those who suffered from much inferiority feeling were likely to have more than the average number of "neurotic" tendencies [as measured by the Bernreuter Personality Inventory (9)].

To what extent do feelings of inferiority correlate with actual intellectual inferiority as measured by intelligence tests? In Smith's study, the correlations between the number of inferiority symptoms and the intelligence scores of his subjects were uniformly negative; but they were also very low, ranging from $-.03$ to $-.12$. In other words, according to this finding, high or low intelligence seems to have little influence on one's susceptibility to inferiority feelings. As Smith points out, inferiority feelings are no "respects of persons. . . . They appear to be fairly uni-

formly distributed throughout the complete range of intelligence." The correlations between inferiority feelings and school grades showed a similar trend; children with higher grades tended to have slightly fewer inferiority feelings, but here again the correlations were low (from .00 to $-.25$). High actual achievement in school, according to Smith's findings, does not go far to make a person immune to inferiority feelings. On the other hand, the results do not support the theory that a child who works for high grades does so primarily as a means of compensating for his feelings of inferiority.

In order to find the relationship between inferiority feelings and social and economic status, the children in this study were classified into seven groups according to the occupations of their fathers, ranging from the professions and big business to semi-skilled and unskilled labor. Children of big business operators were found to have a smaller degree of inferiority feeling than any other group; children of the professional group were approximately similar to the children of unskilled laborers. However, with the exception of children from the professional group, the children who were most favorably situated—as judged by the financial and social prestige of their fathers' occupations—tended to have somewhat less inferiority feeling than children lower in the occupational scale. But here, as in intelligence and school achievement, the relationship was small. The child from the more pretentious home is not much more immune to inferiority feelings than the child from a humble home. Also, it may be added that in the study as a whole, there was no consistent evidence of significant differences between boys and girls with respect to frequency of inferiority feelings. Included among Smith's subjects was a group of juvenile delinquents. They reported a larger average number of inferiority feelings than non-delinquent children.

Several investigations indicate, as is found in observations that one may make in everyday life, that there is by no means a close correspondence between outward evidences of ability, achieve-

ment, success, and prosperity and inner feelings of self-assurance and contentment. Other things being equal, the person who is most competent is likely to be most confident and the person who has achieved and is well-regarded by others is likely to be most content; but the "other things" are seldom equal. The child who wins second place after striving for the leading role in a play or athletic contest may find it harder to be resigned to his place than does the youngster who is assigned the humblest role. One child may grieve over a grade of A— while another exults over a C. Even when a child surpasses all others in his group, wins approval, and tastes success, there may still be a discrepancy between his desires and his abilities, between his aspirations and his achievements.

Aspiration Level. Studies of the level of aspiration in relation to achievement and feelings of success have been conducted by Challman (10). Challman noted, as had been observed by others (14, 28), that the experience of success was not directly related to objective achievement. In one experiment involving a series of five-minute periods of work on simple addition tests, each child wrote down his "goal" (number of examples he expected to finish) before beginning to work and was then interviewed to find how his feelings of success or failure corresponded to his success in achieving his goal. On one series of tests, the scores of nine children were consistently above their announced goals, yet only five of the nine reported consistent feelings of success. Several other children likewise showed discrepancies between objective achievement and reported feelings. Some children who reported feelings of success even though they had failed to reach their goals explained that they had improved since last time or had nearly reached their goals (indicating that, in some cases, improvement or coming close to the region of the goal sufficed to bring feelings of success); children who reported feelings of failure even though they had surpassed their announced goals would explain that they had done better on a previous trial or had not done as well as a nearby child, and so on. Some children

reported mixed feelings. For example, one said: "I didn't reach my goal and that made me feel bad, but I almost made it and that made me feel good." In a group of thirty-three children, it was found that nine placed their goals noticeably below their previous scores (these were described as "cautious"), ten placed their goals in close proximity (these were described as "realistic"), and six tended to place their goals definitely above previous achievement (these were described as "hopeful").

Responses corresponding to those observed in the children of this study can be observed in connection with the larger goals and achievements of everyday life. The factors in determining levels of aspiration and response to success or failure in reaching goals that are important to the child offers a fruitful field for continued study.

Introversion-Extroversion. One hundred two- to six-year-old children were studied in terms of the concept of introversion and extroversion in an investigation by Marston (40). A scale was devised listing traits which were defined as signs of introversion, and each one of these was paired with a description of an opposing trait—for example, self-consciousness versus self-composure; a tendency to turn quickly from one activity to another versus a tendency to persevere in an activity; self-confidence and self-reliance versus their lack; frequently gloomy and moody versus seldom gloomy and moody; sensitivity to other people's opinions versus insensitivity. A number of the children in the study were rated on this scale by adults. The children were also observed in a number of experimental situations designed to measure such behavior as social resistance to a stranger, compliance with requests to perform a difficult task, speed of decision in choosing between several objects, signs of interest in the environment, self-assertion in response to the denial of a wish; and in each situation, the child's reactions were classified according to their degree of extroversion. It can be seen that the behavior studied in this experiment might as readily have been described by such terms as "resistance," "com-

pliance," "perseverance," "self-assertiveness," and the like as by the names "introversion" and "extroversion."

In these observations, it was found that children differed considerably in their responses and that children who express themselves freely in one situation tended to be similarly assertive in others; but the relationship was far from perfect. Also, boys were found to be somewhat less inhibited and more assertive than girls. Again, there was some agreement between the ratings given to the children on the rating scale and the children's scores in the experimental tests; yet the agreement was not so high that one could confidently predict a child's standing in one by knowing his score in the other (the correlations ranged from .35 to .58). No definite relationship was found between behavior designated as "extroversion" and such factors as mental age, height, and weight. In this study, as in a study by Reynolds previously mentioned, it was found that older children are somewhat more subdued than younger children.

Happiness. G. B. Watson's study (62) of happiness among college students includes many observations that are of interest from the point of view of child psychology. In this investigation, each subject was given a blank containing a number of questions and items designed to help him describe himself, and the answers were scored in terms of degrees of happiness. Among the many findings in the study were the following: There seems to be little relation between happiness and intelligence; nor do school marks seem to matter much. "Only" children are as likely, and perhaps more likely, to be happy as are children from large families. Happiness scores were not higher in the case of individuals whose parents were above average in wealth and education; fear, sensitiveness, shyness, and poor health appeared to be important factors in unhappiness. Sex education in childhood, of a kind regarded as "wise" by educated adults, did not seem to improve chances for happiness. There was almost no relationship between the happiness of the adult students and their reported happiness in early

childhood. As the author suggests, an adult may have difficulty in making a genuine estimate of his happiness as a child; but this observation is an interesting one and suggests, as do other findings in Watson's study, an important field for further investigation.

PROBLEMS OF ADJUSTMENT

During the process of development many "problems" appear.¹ Some problems are temporary and characteristic of a certain period of a child's growth, some take one form at one age and persist in other forms at a later age, and some may touch upon only a limited aspect of the child's everyday life, while others may represent tensions and difficulties that permeate his behavior as a whole. Again, some problems may not only be serious while they last but also have unwholesome consequences in later years, while, in the case of some problems, the steps an individual takes to ameliorate or solve his difficulties may have effects that are of value to the individual after his difficulties have been solved. Whatever form a child's maladjustment may take, it represents a response to a difficulty or hurdle that arises in connection with his private preoccupations, his relations with others, the demands that are placed upon him, and factors that cut across his interests and desires.

Problems of adjustment in children might be classified in terms of certain general headings, such as problems arising out of relationships with parents and with other members of the family; problems arising out of a child's relationships with other children outside the home; problems relating to the work of the school, including pupil-teacher relationships as well as the business of meeting the school's demands. Problems might also be classified in terms of the individual's needs or goals. Again, a distinction

¹This section deals briefly with certain aspects of difficulties of adjustment; a full treatment would, of course, require a separate volume. For discussions of problems of adjustment and mental hygiene, see, for example, Louttit (35), Shaffer (47), Symonds (55), Kanner (33), Hollingworth (27), Witty and Skinner (64), and Rogers (46).

might be made between the manner in which problem behavior functions in the life of the individual himself and the manner in which it disturbs or interferes with others. No matter how problems are classified, there will be much overlapping between the different classes, as has been stressed in other ways above. It may be pointed out in passing, however, that the significance of a child's problem may be more circumscribed in some situations than in others. For example, a child may have difficulties with his schoolwork and in his relations with the teachers, and still have what seem to be satisfactory relations with his peers outside the classroom (although, as noted in an earlier chapter, a child who is favorably accepted by other children is also more likely than not to be a child who is progressing smoothly in class); a child may appear to have made satisfactory adjustments to the home situation and to his teachers, but he may fail to get along well with other children; again, he may be seemingly free from problems as far as his relations with others are concerned and yet suffer from conflicts and stresses in his private life.

Some "Problems" of Young Children. Table XL shows the frequencies of various problems presented by 118 young children whose case histories were analyzed by Foster and Anderson (17). The children represent different socio-economic levels and a wide range of intelligence. Included among the selected cases were children who had been referred to clinics as well as children who had not been labeled as "problems." The author presents the tables as illustrative of different problems that occur in this age range, rather than as a definitive tabulation of the nature and frequency of behavior disorders at the preschool level. They also emphasize the fact that labeling of problems presents difficulties.

It will be noted that many of these problems revolve around the establishment of routine habits, while others concern temper tantrums, fears, and other emotional tensions. The item "nervous habits" includes such forms of behavior as thumb-sucking, finger-sucking, nail-biting, twitching, tics, and so on. The item "over-

imaginative" includes lying as well as other symptoms. Fears and temper tantrums, it can be seen, are each represented by a relatively large number of cases.

TABLE XL

CLASSIFICATION OF PROBLEMS OF 118 SELECTED CHILDREN AGED TWO TO SIX YEARS AND PERCENTAGE OF CHILDREN SHOWING EACH TYPE OF PROBLEM¹

	Percentage of Cases		
	Boys	Girls	Total
Number of Cases.....	66	52	118
Problem:			
Fears.....	19.7	26.9	22.9
Temper tantrums.....	18.2	11.5	15.3
Other emotions (moodiness, cruelty)....	34.8	40.4	37.3
Nervous habits (thumb-sucking, nail-biting, twitches, etc.).....	31.8	25.0	28.8
Overdependent.....	7.6	3.8	5.9
Hyperactive.....	13.6	13.5	13.6
Fatigue.....	15.2	3.8	10.2
Sleeping.....	10.6	19.2	14.4
Handling genitals.....	3.0	7.7	5.1
Toilet habits.....	10.6	9.6	10.2
Feeding.....	27.3	34.6	30.5
Overimaginative.....	4.5	7.7	5.9
Improper language.....	6.1	1.9	4.2
Speech.....	19.7	15.4	17.8
Playmates.....	18.2	13.5	16.1
Authority (disobedience, negativism, impudence).....	31.8	26.9	29.7
School.....	16.7	0.0	9.4
Miscellaneous.....	16.7	15.4	16.1

In a separate table, Foster and Anderson show the frequency of the various problems at different age levels from two to six years. As one would expect, certain problems are more numerous at certain ages than at others. It was also noted in the case of children who were investigated again a year or more after they first had come into the study that many problems had disappeared, while others persisted. When the home environments were rated, it appeared that there was a strong tendency for problems to wane in the case of children from "good" homes and a tendency

¹ Adapted from Foster, J. C., and Anderson, J. E.: *The Young Child and His Parents* (Minneapolis: University of Minnesota Press, 1930), 247 pp. Reproduced by permission.

for old problems to persist and new ones to develop in homes that were rated "poor."¹

The fact that some problems show a decreasing incidence with age, that some retain relatively the same frequency, and that others show an increasing incidence has been noted in a study by MacFarlane (39). Among those showing a decreasing incidence were nocturnal enuresis, diurnal enuresis, and soiling. Thumb-sucking also showed a slow drop in incidence with age. Among problems that showed an increasing incidence with age were many problems classified under the heading of "personality," such as jealousy, quarrelsomeness, and oversensitiveness. There was also an increasing incidence with age in the case of fear, lying, and excessive modesty. MacFarlane points out, however, that a study of the same children at a later age might reveal that the incidence of some of these problems would subside, for the upward trend of the curve for some of them had stopped before the age of five. Problems that showed little variation with age within the preschool span were masturbation, constipation, and restlessness in sleep. Certain conditions—such as food finickiness, physical timidity, and speech problems—reached a peak at thirty-six months and then subsided.

Many of the specific problems noted in Table XL have been discussed in earlier chapters dealing with social and emotional development.

The Problem as to What is a "Problem." In connection with some of the apparent difficulties of preschool children, questions arise as to what extent a genuine problem exists, to what extent the problem is due to the fact that too much is being expected of the child at an early age, and to what extent the problem is one of adult definition. For example, the fact that difficulties in bladder control are reported by many parents at the age of two or three years, followed by a decline in such difficulties, would suggest that, in some instances at least, the problem exists in part by

¹ The reader is referred to the interesting book by Foster and Anderson for case history accounts of one hundred of the children represented in Table XL (17).

virtue of the fact that standards are too high or that the earlier methods of training were not appropriate to the child's level of maturity. But whether this is the case or not, the condition can be made an acute problem for the child by the manner in which it is handled by his parents.

It is only to be expected that adults will tend to formulate children's behavior disorders in terms of practical effects in the day's routine and that they also will label them in adult terms and from an adult point of view. In dealing with such disorders, it can be noted, adults are confronted with some of the same difficulties that arise in attempts to understand other aspects of the child's behavior. It is pointed out in earlier chapters, for example, that adults have difficulty in obtaining genuine information as to the development of a child's ideas and concepts, the meanings he attaches to language, and the meanings involved in his make-believe. One difficulty is that the child himself is somewhat inscrutable and does not formulate his operations in textbook terms; another is that adults have difficulty in approaching the phenomena from the child's point of view and sometimes have difficulty even in knowing what questions to ask in order to obtain the information they desire. Frequently the specific form a child's problem takes is less important than the underlying feelings and motives. Also, a child may show a number of behavior problems that are all related to each other.

We may, for example, find a child of three and a half who, for some time, has had a good record in maintaining nighttime bladder control but then reverts to earlier ways and begins regularly to wet his bed. Here, on the face of things, is a problem of bed-wetting. It may be found, however, that the bed-wetting began when a new baby came into the family and the whole household revolved around this new child. Under somewhat similar circumstances, a child who has quite willingly gone to bed may begin to exhibit what seems to be fear of the dark, urging one of his parents to stay with him in the bedroom, at least until he is asleep; or he may wake up during the night and

call to his parents, which was not his wont at an earlier time. Here seems to be a problem connected with sleeping. Another child, who until recently has fed himself, now demands to be fed. In each instance, the crucial factor may be that the child is neglected or feels neglected and insecure. To be sure, the fact that one child expresses his "problem" in one way, the other child in another, is of significance too, and further study of the children might reveal many factors in their past histories that influenced the particular turn that the problem took.

It may also be noted, however, that in the normal course of his learning, a child may acquire many habits and ways of behaving that eventually make difficulties for him, even though no especially deep or devious motive is involved. For example, much that comes to be labeled rudeness, bad manners, and even insolence, as a child matures may represent rather specific ways of behaving that the child has acquired in the particular environment in which he has lived and that correspond to the behavior of others in the same environment. In like manner, certain forms of diffidence and a tendency to withdraw from social contact in such a manner that the child is labeled as a "shy" and "withdrawn" child may also flow in part from lack of opportunity to acquire social techniques, rather than primarily from profound underlying feelings of fear or of weakness or rejection. A tremendous amount of more or less incidental habit formation is involved in practically all forms of behavior. To be sure, such specific habits or lack of appropriate skills may, in turn, produce emotional complications and inaugurate a vicious circle, but we can recognize the importance of attention to underlying motives and yet recognize that direct dealings with a "problem" can often bring wholesome changes in specific situations. Numerous illustrations of this are shown in earlier accounts of active attempts to overcome fear, shyness, submissiveness, and "immature" forms of behavior, such as showing a temper, crying, and running for help. Often, of course, treatment of a symptom may merely mean that the child's problem bobs up again in a different form,

but it similarly is true that attempts to understand and redirect underlying motives often fail. The procedure of treating symptoms and the policy of probing into motives and trying to clarify these to the parent or to the child himself as he becomes older are not antithetical but complementary.

Some Behavior Problems of Older Children. Table XLI shows a classification of problems as reported by mothers in 211 families,

TABLE XLI

PERCENTAGE OF INDIVIDUALS EXHIBITING VARIOUS DIFFICULTIES, AS REPORTED, BY MOTHERS¹

<i>Trait</i>	<i>Percentage of Boys (257)</i>	<i>Percentage of Girls (235)</i>	<i>Percentage of Total (492)</i>
1. Nervousness.....	30.7	35.3	32.9
2. Sensitiveness.....	26.1	37.9	31.7
3. Stubbornness.....	31.5	27.2	29.5
4. Disobedience.....	31.9	21.3	26.8
5. Timidity or shyness.....	17.5	26.0	21.5
6. Temper tantrums.....	21.0	18.3	19.7
7. Emotional outbreaks.....	15.2	20.0	17.5
8. Biting nails.....	16.7	17.9	17.3
9. Given to fighting.....	20.6	4.7	13.0
10. Selfishness.....	13.6	11.5	12.6
11. Laziness.....	14.0	10.6	12.4
12. Desire to be alone.....	8.9	11.1	10.0
13. Untruthfulness or deceitfulness.....	10.5	8.1	9.3
14. Indifference or sluggishness.....	9.7	5.1	7.5
15. Left-handedness.....	7.0	6.8	6.9
16. Conceit.....	5.4	6.8	6.1
17. Playing poorly with children.....	5.1	6.8	5.9
18. Blinking eyes or shrugging shoulders...	6.6	4.7	5.7
19. Stuttering or lisping.....	7.0	2.6	4.9
20. Lack of interest in childhood activities..	5.1	1.3	3.3

representing 499 persons aged one to twenty-four years, with a modal age of about eight. Since the age range is so wide, the data reported in the table do not give an indication of problems characteristic of a given period, although many of the items that are mentioned, it can be observed, represent forms of behavior that are not limited to any single age level. The data of this study were obtained by means of questionnaires. No doubt there is a good deal of overlapping between problems such as those that are mentioned, and, in keeping with points mentioned above,

¹ Adapted from Steinbach, A. A.: "A Survey of Adjustment Difficulties in Children and Youth Drawn from the Normal Population," *Elementary School Journal* (1933), 34: 122-129. Reproduced by permission.

what strikes the adult as several different problems may actually represent varying manifestations of the same problem. It appears from this list, as from others, that some problems are problems by definition, so to speak. Among other matters, it will be noted that about seven per cent of the individuals are reported to be problems by virtue of left-handedness. Actually, left-handedness is no problem, unless the child is sinister both literally and figuratively or unless his parents and teachers make it a problem for him.

Behavior Problems in School. The problems exhibited by 100 elementary-school children in an underprivileged environment, who were described by their teachers as presenting quite outstanding difficulties at school, have been reported by L. Tucker (60). Sixty-eight of the children were described as showing aggressive and antagonistic behavior, such as annoying others, bullying, sulkiness, tantrums, and so forth. Difficulties with authorities—such as disobedience, rudeness, defiance, impudence toward the teacher—were exhibited by sixty-two children; difficulties in application to schoolwork—including deficiency and inability to do the work, as well as lack of interest, carelessness, lateness, and inattention—were reported in the case of fifty-seven children. There were thirty-five children who were described as showing difficulties through violation of classroom order. There were also a few cases of truancy, stealing and lying, and of “withdrawing personality traits,” such as nervousness and crying. Tucker found that teachers who knew the children showed a high degree of agreement in judging whether a given child was “troublesome” or “nontroublesome.” Of the 200 pupils in the study as a whole (100 initially selected as having difficulties, the others selected as representing a control group), ninety-two per cent were similarly placed in one or the other group by all teachers who knew them; and in the case of the remaining eight per cent of the cases, at least two or more former teachers agreed as to whether the child was a “troublemaker” or a “nontroublemaker.” This fact of high agreement with regard to the conduct of an outstandingly

“troublesome” child, it can be seen, alone is highly significant; for, regardless of the factors that are to blame, the child now carries not only the disabilities and behavior patterns that make for difficulty in his adjustment but also a widely recognized reputation as a “difficult” child. It was also found, among other things, that a large number of the “troublemakers” had a history extending back to the first grade of school. It was observed in this study, as has been found in many other studies, that children who were having difficulties had a lower average intelligence than the control group and that, in the case of many of them, the home situation was quite unfavorable.

Another summary of reports obtained in an inquiry into the manner in which behavior problems are manifested as viewed by teachers is shown in Table XLII. The results in this table are based upon reports by teachers in a junior high school in New York City. The teachers were given a behavior inventory containing the thirty-seven items shown in Table XLII, were asked to observe their pupils, and, at the end of the term, were asked to check each child according to the list. It is possible that the problems reported in such a study would be somewhat different in wording and perhaps in terms of underlying concepts if adults were asked to describe children in their own words, rather than to check a predetermined list, or if children themselves described their behavior from the point of view of the private feelings and difficulties of the individual children. An even different formulation would no doubt emerge if the same children were studied by a mental hygienist. However, the table is of interest in showing the frequency of certain observable forms of behavior. In the original study, the investigators show separate results for each yearly age level from eleven to fourteen years; they also show the extent to which certain forms of behavior tend to be associated with one another.

Children's Problems as Reported by Themselves. Inventories of emotional adjustment, adapted from instruments designed for adults (64), have been devised for use with older children. A

TABLE XLII

PERCENTAGE OF 11- TO 14-YEAR OLD JUNIOR-HIGH-SCHOOL
PUPILS WHO EXHIBITED VARIOUS FORMS OF BEHAVIOR,
AS REPORTED BY THEIR TEACHERS BY MEANS
OF A CHECK LIST¹

	Boys (438)	Girls (352)
Suspiciousness.....	12.6	8.2
Resentfulness.....	20.5	15.3
Fearfulness.....	9.5	7.4
Cruelty.....	1.8	0.
Tendency to depression.....	11.2	6.0
Tardiness.....	29.2	13.9
Truancy.....	4.3	2.8
Destruction or abuse of school property	0.5	0.
Lying.....	8.2	3.1
Cheating.....	24.4	17.3
Whispering.....	74.7	72.4
Interrupting.....	29.4	9.7
Inability to work calmly.....	19.2	12.5
Inattentiveness.....	44.1	36.6
Lack of interest.....	27.4	27.6
Carelessness.....	39.7	35.8
Failure to prepare.....	37.4	15.3
Laziness.....	22.8	12.2
Disobedience.....	12.8	5.4
Insubordination.....	5.5	2.0
Bullying others.....	6.6	1.4
Tattling.....	9.4	12.8
Stubbornness.....	18.0	10.2
Temper tantrums.....	9.8	4.5
Rudeness to others.....	10.0	2.8
Shy, withdrawing.....	21.0	28.1
Oversensitive.....	13.2	11.1
Showing off.....	20.1	6.0
Daydreaming.....	19.9	23.5
Nervousness.....	14.2	5.7
Easily frightened.....	5.5	7.1
Suggestibility.....	7.6	6.0

child may be asked to answer "yes" or "no" to a long list of questions concerning symptoms, such as: "Are you usually happy?" "Do people find fault with you too much?" "Are you afraid of water, of crossing a bridge, or of going into a tunnel?" "Have you the habit of twitching your head, neck, and shoulders?" "Have you a feeling that things are not real?" "Do you feel that no one loves you?" "Do you like to tease others until they cry?" Other questions deal with compulsions, such as the compulsion to steal, to set fire to things, to hurt others; and there are also

¹ Adapted from Hurlock, E. B., and McDonald, L. C.: "Undesirable Behavior Traits in Junior High School Students," *Child Development* (1934), Vol. 5, 3: 278-290. Reproduced by permission.

questions concerning feelings of guilt, being abused, falling, chronic fatigue, being different from others, and so forth.

In a study by Mathews (41), over 1,000 children rated themselves by means of such an inventory, containing seventy items. At the age of ten, seventy-five per cent of the children confessed to six or more of the symptoms on the list. The median ten-year-old boy admitted having eighteen symptoms, while girls at this age had a median score of 11.5; but the number of symptoms declined at later ages in the cases of the boys, from eleven to seventeen years, while the girls at the later age levels reported a larger number of symptoms than the boys. Thus, according to his own rating, the usual child of ten or more is likely to have several complaints or "quirks" of one form or another; he is not, in other words, serene in all respects, but is a somewhat troubled creature. But even on the quantitative basis of the number of symptoms or of the severity of the symptoms, it is still difficult to draw a line between the stable and the unstable child.

Emotional stability, as measured by the above and similar methods, has been studied in relation to other aspects of behavior. Delinquent children have been found to report a greater number of symptoms than normal children (Slawson, 49); children who deceive and cheat more than the average are likely (Hartshorne and May, 25) to have a somewhat greater number of symptoms than noncheaters. Children who are superior in intelligence, on the other hand, tend to have fewer symptoms of maladjustment than do children of normal intelligence (Terman, 57). On a questionnaire including eighty-five items, intellectually gifted children gave an average of 11.4 symptomatic answers, as compared with a control-group average of 16.1.

Some Problems in Defining Maladjustment. If one used a perfectionist standard, one would be able to find evidences of maladjustment in practically all children. There is, of course, no sharp line between what might be considered as ideal behavior and behavior disorders. Behavior deviations that are similar in their overt manifestations may function quite differently in the

lives of different children and may represent quite different degrees of seriousness. A child may, for example, exhibit marked shyness or lack of sociability and thus deviate from the norm, yet in his particular case, such behavior may fit well into the larger pattern of his behavior. Moreover, some temporary difficulties arise more or less inevitably in the course of a child's response to the demands made upon him by others and to changes within himself. Likewise, adult interpretations may differ considerably. As noted in an earlier chapter, for example, certain forms of "resistant behavior" at the infancy and preschool levels may be regarded by one parent as a serious matter and by another as a normal and wholesome feature in the child's business of exploring in social relationships and of acquiring a degree of independence. Again, at later times, there may come periods of resistance or rebellion, or an outcropping of moodiness or sensitiveness, as sometimes appears at puberty; but such manifestations again may be a normal feature of development that cannot be construed to mean that parents have failed in their job of child-rearing or to mean that the child's condition is serious. Again, when a child is a problem in school, the question arises as to whether the problem resides in him or in the requirements and conditions of the school. There are, of course, deviations that are patently so obviously disturbing in their practical effects that there is no question as to their seriousness.

It may be noted, in passing, that the common problems exhibited by children to some extent hold up a mirror to the kind of culture in which they live. When we find that a large proportion of children (and adults) seem to suffer from various tensions, insecurities, conflicts, and stresses and strains of various sorts, the question suggests itself as to whether it is the individual who is out of hand or whether social customs and standards have gotten out of hand and are imposing "unnatural" demands that the average human being finds it impossible to meet. As against this viewpoint it might be urged that conflicts, irritations, and insecurities of various kinds not only are inevitable in a civilized

culture but also, in the long run, may have a salutary effect upon the individual's development. Such problems, and even crises of a rather severe order, may represent hurdles in the business of acquiring experience and maturity. However, no one would advocate a policy of placing needless frustrations or obstacles in a child's path.

Another debatable point concerns the lengths to which adults should or can go in fitting the environment to the child so that he may be protected from various problems and conflicts. From everyday observation, we can see that a deliberate policy of protecting and sparing the child from difficulty frequently comes to no good end. At best, it would be impossible for a child's elders to smooth the child's path in a thoroughgoing way. If he is spared from problems in his relations with his elders, he may come upon problems in his relations with other children or upon unheralded problems in his private adjustments and attitudes. The very fact that he lives in a world inhabited by other people carries with it the occasion for some friction and the necessity for some discipline, repression, and conformity. One difficulty in adapting the environment so as to spare the child is the difficulty noted above—namely, that, no matter how assiduous the adult may be, he may fail through lack of insight into the child's own ways of reacting. The very steps taken to protect the child may contribute to the result that the adult is trying to forestall. (An example is that of a child whose fear of dead people was accentuated by the mother's effort to prevent him from running to the scene of a nearby fatal accident, or of a child who was further confirmed in his lack of self-confidence by the obvious efforts made by his elders to praise his performance.) To be sure, this does not imply that a child should be exposed to needless shocks or impossible demands.

Some Factors Associated with Difficulties of Adjustment. Among the more obvious factors that make for difficulty are poor health, malnutrition, physical defects, and other physical factors that make for irritability and lack of energy or ability. The ex-

tent to which physical and mental handicaps contribute to emotional difficulties will, of course, vary with the demands placed upon the child and attitudes concerning such disabilities. As noted in earlier chapters, many problems arise in connection with competition for affection, struggles for prestige, and from faulty skills and habits in everyday situations. A listing of even a few of the countless factors that contribute to maladjustment and of procedures that may be used to help overcome a child's maladjustment would go far beyond the scope of this book. Certain general factors may, however, be mentioned, in addition to comments made above.

It has been found, for example, that the problems of pupils at school, especially in the first grade, are influenced to a large extent by factors in the home environment. In a study by Hattwick and Stowell (26), it was found that from seventy-three to eighty-two per cent of the children who appeared to be subjected to parental "overprotection," who were "babied" or "pushed," had records of poor work habits, while records of good work habits at school were exhibited by over seventy per cent of the children who came from homes where there was no such evidence of overprotection on the part of the parents.

A study by Baruch (8) likewise shows the extent to which tensions and difficulties in the home situation may be associated with maladjustment in the child. For example, in a large percentage of cases in which one or both parents reported that there was lack of sexual adjustment between husband and wife, or in which there appeared to be tension between husband and wife on the subject of who should exercise authority in the home, it was found that the children exhibited poor adjustments in nursery school as compared with children in whose homes no such difficulties appeared to prevail. A study by Francis and Fillmore (18) reveals the extent to which children's behavior is influenced by parental attitude, as distinguished from physical factors in the child's home and neighborhood.

While parental "overprotection" is frequently associated with

behavior difficulties in children, even more damaging may be the condition of being rejected by the parent. In a study by Stemsrud and Wardwell (54), for example, an inquiry was made into the home situation of fourteen children who were patients in a clinic and who had brothers or sisters who were not maladjusted. It was found that the well-adjusted children were favorites at home, while the parental attitudes toward the maladjusted children involved rejection or rejection combined with a measure of overprotection. It is, of course, difficult to give a clear statement of the cause-and-effect relationships in a situation such as this; the child's maladjustment may have arisen as a result of initial parental favoritism for another child, but it is also possible that factors in the child himself or in circumstances associated with his maladjustment also contributed in part to the development of parental attitudes.¹

Adult Attitudes Toward Children's Behavior. Interesting findings concerning the attitudes of adults toward "undesirable" behavior in children have been reported by Wickman (63), who asked teachers and clinical workers to rate the various forms of problem behavior in terms of their seriousness. Some findings in this study are presented, in abridged form, in Table XLIII. There were notable differences between the teachers' and the clinical workers' ratings. Among the problems regarded as most serious by teachers were such matters as stealing, sex activity, obscenity and masturbation, profanity, smoking, disobedience, and untruthfulness; rated as among the least serious were shyness, "unsocialness," sensitiveness, suspiciousness, being overcritical of others, and the like. The clinicians rated "unsocialness," suspiciousness, and evidences of unhappiness as *most* serious. Notably, the teachers tended to regard various forms of transgression against authority as the most serious, while clinicians tended to regard such forms of behavior as least serious. In other words,

¹For a series of studies dealing with maternal overprotection and rejection, see Smith College Studies in Social Work (52). In a recent book, Symonds (56) has discussed the subject of parental attitudes.

the teachers apparently judged the child's behavior in terms of conventional standards and of the inconvenience which the behavior caused in the school routine, while the clinicians were more concerned about signs which might indicate that the child was not carefree and was a problem to himself.

One especially suggestive comment made by Wickman is that a counterattack against the child who is already too aggressive or the toleration or tacit encouragement of the child who is shy and retiring may simply have the effect of intensifying the child's maladjustment.

Later studies have indicated that different groups of teachers and clinical workers vary somewhat in their ratings of the seriousness of various "problems," and they indicate also that the discrepancy between the ratings of clinical workers on the one hand and parents and teachers on the other is likely to be somewhat reduced after teachers and parents have studied mental hygiene.

It should be noted that results such as those shown in Table XLIII will be influenced by certain practical considerations. The teacher, by virtue of her position, is subject to certain practical pressures that are not brought to bear upon the clinical worker. The teacher is held more or less responsible for the effects of aggressive and destructive behavior that disturb the functioning of the school and interfere with the work of other pupils. The aggressive child may not be as great a sufferer as the shy and retiring child, to be sure, but if the mental hygienist had to work with such a child in the company of a class of thirty or forty children, it is likely that he too would view the behavior of the aggressive youngster as being more serious, at least for the moment, than the behavior of a child who may be maladjusted but who suffers in silence. This practical observation does not, of course, detract from the significance of the findings reviewed above.

Some Factors in the Treatment of Problems. Steps that may be taken to help a child who is in difficulty obviously show a wide range. Attention to his physical condition, problems of mal-

TABLE XLIII

THE SERIOUSNESS OF CHILDREN'S BEHAVIOR PROBLEMS, AS RATED BY
511 TEACHERS AND BY 30 CLINICAL PSYCHOLOGISTS¹

(The table shows the ten problems of a larger list that were rated as most serious, and the ten that were rated as least serious, by the two groups.)

Teachers	Average Rating		Clinicians	Average Rating	
	Teachers	Clinicians		Clinicians	Teachers
Upper Ten:			Upper Ten:		
Heterosexual activity.....	17.3	9.9	Unsocialness.....	17.3	8.3
Stealing.....	17.0	12.5	Suspiciousness.....	16.4	9.1
Masturbation.....	16.7	6.4	Unhappy, depressed.....	16.2	11.5
Obscene notes, talk.....	16.6	8.8	Resentfulness.....	14.1	10.8
Untruthfulness.....	15.8	10.3	Fearfulness.....	14.0	9.7
Truancy.....	15.6	10.3	Cruelty, bullying.....	13.5	14.8
Impertinence, defiance.....	15.0	7.1	Easily discouraged.....	13.4	11.5
Cruelty, bullying.....	14.8	13.5	Suggestible.....	13.3	11.0
Cheating.....	14.7	10.3	Overcritical of others.....	13.2	7.9
Destroying school materials.....	14.3	5.1	Sensitiveness.....	13.1	7.0
Lower Ten:			Lower Ten:		
Dreaminess, unsocialness.....	8.3	11.3	Masturbation.....	6.4	16.7
Imaginative lying.....	8.1	7.5	Disobedience.....	6.4	14.1
Interrupting.....	8.0	2.8	Tardiness.....	5.6	10.5
Inquisitiveness.....	8.0	5.3	Inquisitiveness.....	5.3	8.0
Overcritical of others.....	7.9	13.2	Destroying school materials.....	5.1	14.3
Tattling.....	7.5	8.8	Disorderliness in class.....	3.4	11.7
Whispering.....	7.5	0.8	Profanity.....	2.9	12.3
Sensitiveness.....	7.0	13.1	Interrupting.....	2.8	8.0
Restlessness.....	6.9	6.4	Smoking.....	2.3	12.0
Shyness.....	5.4	12.5	Whispering.....	0.8	7.5

nutrition, and physical illness that make for fatigue, excitability, lack of energy, and irritability may prove to be a deciding factor. Attention to the background of his problem, the emotional atmosphere that surrounds him, sometimes will go far to relieve distress. Any procedure that helps an individual better to understand his own conduct and the motives behind it may also be helpful, although in itself such an understanding may quite fail to solve the difficulty. Sometimes the very attention that a child receives in

¹ Adapted from Wickman, E. K.: *Children's Behavior and Teachers' Attitudes* (New York: The Commonwealth Fund Division of Publications, 1928), pp. 124-26. Reproduced by permission of The Commonwealth Fund.

connection with his problem and the evidences of concern thus brought home to him may be a more decisive factor in solving his problem than the particular techniques that are used in dealing with his problem as such. Again, as every adult who has worked with children can testify, certain problems frequently can be relieved by remedial work that overcomes a special disability and—as noted in earlier discussions of children suffering from resentfulness, “infantile” forms of behavior, shyness, and various kinds of fears—active attempts to help the child to improve his competence and to acquire useful techniques may produce a decided change in his behavior; again, as suggested in earlier chapters, the motives underlying a child’s behavior disorder may be directed into channels that are more acceptable to others and more satisfying to the child, or the recognition that he gains through avenues not directly related to his symptoms may give him an outlet or reduce the area of friction or yield satisfactions that relieve his difficulties.

Numerous studies have dealt with the question as to the response of the maladjusted child to clinical treatment by mental hygienists. The results indicate, as one would expect, that the success or failure of treatment depends upon a tremendous complexity of factors. The treatment is least likely to be successful if it is impossible to win the coöperation of the home or to relieve overwhelming pressures in the child’s environment. While the studies show that a relatively large proportion of children are helped, they also indicate that many children who receive treatment over varying periods of time do not seem to show significant improvement. In a study by Christianson, Gates, and Goleman (11), for example, an effort was made to discover what had happened to randomly selected cases from a total of about 700 children who had been treated in a mental-hygiene clinic during the course of a year. The cases were divided into three large age groups, and 100 cases were selected at random from each group for further study. In the case of children under twelve years of age, it was judged that fifteen per cent were successfully adjusted, twenty-six per cent partially adjusted, twenty-seven per cent un-

improved, and thirty-two per cent undetermined. In the age range from twelve to twenty years, ten per cent were judged to be successfully adjusted, twenty-eight per cent partially adjusted, twenty per cent unimproved, and forty-two per cent undetermined. The corresponding percentages for persons aged twenty-one years and older was seven, twenty-eight, twenty-four and forty-one. These illustrative figures cannot be taken as representing the general probabilities of success or failure in mental-hygiene treatment, since the outcomes will vary, as the authors clearly show, in the case of different forms of difficulties and limitations imposed upon the worker. Results are also likely to vary in different clinics (the children in the present study were under treatment for relatively short periods of time, a majority of them were carried for less than a year). Needless to say, it is difficult also to determine what constitutes success or failure; benefits may accrue that are not observed and there may be apparent successes, when actually other troubles, related to the same underlying difficulty, crop out at a later time.

One thing that is much needed in connection with the treatment of problem children is more systematic information concerning personality development in normal children and of the developmental factors in the difficulties of maladjusted children. The studies reviewed in earlier chapters suggest that a form of treatment involving active dealings with the child in terms of the practical situations he faces in everyday life, along lines suggested by direct observation of his daily behavior and of his relationships with people in everyday life, are likely to be more beneficial than the relatively passive approach involved in taking the child out of his situation and simply talking to him and offering verbal advice to him and his elders, no matter how perspicacious the advisor may be.

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